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CARBON TETRACHLORIDE—AN UNDERRATED HAZARD*

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THE OBJECT OF THIS PAPER is to call attention once again to the hazards of exposure to carbon tetrachloride. This may seem unnecessary when every physician knows that carbon tetrachloride can produce fatal liver damage. Indeed, because of this its industrial uses have been curtailed notwithstanding superior qualities as a solvent and dry cleaning agent. However, our experience has shown that the public is largely unaware of its toxicity, and cases of poisoning continue to arise from its use in the home or on a small scale in industry.

Not infrequently the patient does not associate his illness with previous exposure to carbon tetrachloride and fails to mention the exposure to his physician. In addition, physicians often do not realize that acute renal failure is a much commoner manifestation of poisoning by carbon tetrachloride than is massive necrosis of the liver. Thus it follows that the correct diagnosis is not suspected by either patient or physician.

Carbon tetrachloride has a long medical history dating from 1865 when it was suggested that it might be a useful anæsthetic agent.[1] It was soon abandoned for this purpose because depth of anæsthesia could not be properly judged and sudden death resulted.

In 1921 its use was advocated for hookworm infestation. During the next ten years it was proven that it could cause central necrosis of the liver and renal damage. In fact, the use of carbon tetrachloride to produce liver necrosis has become an accepted technique in experimental medicine. Review of several recent textbooks of pathology shows that the only reference to carbon tetrachloride is its action on the liver. In the last 15 years, however, it has been shown that in humans the most common significant lesion is acute injury to the tubules of the kidney producing acute renal failure or, as it is sometimes called, lower nephron nephrosis.[2-5] Oliver has shown by micro-dissection of individual nephrons that the lesions may be found throughout the length of the tubule.[6] Hence the terms acute renal failure or acute tubular injury are to be preferred to lower nephron nephrosis. The commonest causes of acute renal failure are surgical and obstetrical emergencies such as hæmorrhagic or traumatic shock and mismatched transfusions. However, it is important to realize that if one can exclude such conditions, the commonest medical cause of acute renal failure in this part of the world is carbon tetrachloride intoxication.[7, 8] This may follow its inhalation, ingestion or absorption through the intact skin. Ingestion of alcohol before, during or soon after exposure greatly increases the likelihood of renal damage.

CASE REPORTS

Table I summarizes the last 12 cases of carbon tetrachloride poisoning which we have seen during the past seven years.

CASE 1.—While drinking beer with friends, a practical joker refilled the patient's glass with carbon tetrachloride. After a few gulps he noticed the prank and became nauseated but did not vomit. He developed acute renal failure and died.

CASE 2.—Epigastric pain and vomiting started suddenly after supper. His physician made a diagnosis of duodenal ulcer and treated him accordingly for a week. He continued to vomit, grew weaker and drowsy and was brought to hospital. On admission he had a generalized seizure. In view of the elevated blood urea nitrogen, albumin and red cells in the urine and the acute onset of the illness, acute renal tubular injury was suspected. Since carbon tetrachloride is the commonest medical cause of this condition, he was questioned specifically about the possibility of exposure. It was found that nine days previously he had been extracting artifi-

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TABLE I.—SUMMARY OF 12 CASES OF CARBON TETRACHLORIDE POISONING

Case	*Sex*	*Age*	*Mode of exposure*	*Concomitant alcohol ingestion*	*Acute renal failure*
1	M	70	Ingestion	+	+
2	M	37	Inhalation	+	+
3	F	37	Inhalation	+	+
4	M	37	Inhalation	+	+
5	M	39	Inhalation	+	+
6	M	45	Ingestion	+	+
7	F	40	Ingestion	+	+
8	M	26	Inhalation	+	+
9	M	28	Inhalation	0	0
10	M	22	Inhalation	0	0
11	M	41	Ingestion	0	0
12	M	36	Inhalation	0	0

cial fibres through carbon tetrachloride. That afternoon he had had two bottles of beer. His symptoms started that night. He made a complete recovery.

CASE 3.—The patient gave a typical story of cholecystitis. She was given 1000 c.c. of fluids intravenously and her condition improved. The next day this was repeated and the patient commented that her rings felt tight. It was then noted that her bladder contained only a few c.c. of bloody urine. She was admitted with a diagnosis of acute renal failure of unknown origin. Direct questioning elicited that four days previously she had cleaned her chesterfield with carbon tetrachloride while having a bottle of beer. She ran a stormy course with a hypertensive crisis of 230/150 and generalized seizures on the fourth day of diuresis. She eventually made a complete recovery.

CASE 4.—This patient had cleaned his wife's dress with carbon tetrachloride while having a bottle of beer. He developed acute renal failure and recovered.

CASE 5.—This man was a safety engineer in a large factory. One evening after having several drinks of whisky he fell asleep in bed while smoking a cigarette. The mattress caught fire but, having the tools of his trade at hand, he put the flames out with an extinguisher and went back to sleep. The next day he reported to the plant physician for treatment of burns. During the following two days he developed malaise, epigastric pain and vomiting. He was admitted to hospital with a diagnosis of alcoholic gastritis. Oliguria and abnormal urine findings with elevated blood urea nitrogen were noted. It was only then that the full story was obtained and properly interpreted. The fire extinguisher had contained carbon tetrachloride. He made a complete recovery.

CASE 6.—While drinking heavily one weekend, this man went to the cupboard for another bottle of gin and by mistake took carbon tetrachloride which had been placed in a gin bottle. He developed acute renal failure and recovered.

CASE 7.—This patient had consumed several quarts of beer during the afternoon and evening. That night she was troubled by coughing and went to the bathroom to take a cough mixture. In error she took carbon tetrachloride. She recognized her mistake immediately and tried to combat the effect by drinking milk. During the next two days abdominal and back pain, nausea, vomiting and drowsiness developed. She was seen on several occasions by two physicians, who were told that she had become ill after drinking carbon tetrachloride. However, the family was assured that if this were responsible, she would now be dead. Generalized convulsions started on the 13th day after exposure and she was sent to a hospital outpatient department. Seven hundred and twenty c.c. of clear urine were obtained by catheter. This urine contained ++ albumin, a few red blood cells and numerous white blood cells; specific gravity was 1.008. The blood creatinine was 15 mg. per 100 c.c. She was, in fact, entering the diuretic phase of acute renal failure and eventually made a complete recovery.

CASES 8 and 9.—These were electricians cleaning high-tension equipment in a bucket of carbon tetrachloride. Neither considered this to be dangerous and had done it several times before, but in the open air. This day the cold weather compelled them to work inside. Each had been equally exposed over a period of three hours. Case No. 8 had had 4 bottles of beer the night before and developed renal tubular damage. No. 9 had had no alcohol and suffered only slight dizziness on the day of exposure.

CASE 10.—This man was fumigating grain with a bromide and carbon tetrachloride mixture when the glass container broke. He suffered no serious illness.

CASE 11.—Patient accidentally drank some carbon tetrachloride left in a ginger ale bottle. There were no serious consequences.

CASE 12.—This was a chemist who supervised a laboratory in which 20 people were employed. He used carbon tetrachloride to remove cement from table tops in his kitchen at home. Exposure was for two hours. Though he had marked nausea and vomiting during the next three or four days, he made an uneventful recovery and showed no renal or hepatic damage.

DISCUSSION

It will be noted that in the first eight cases there was exposure to alcohol as well as to carbon tetrachloride. Severe renal damage followed in every instance. In the remaining four cases there was no ingestion of alcohol and no renal damage. In none of the twelve cases was there serious hepatic involvement.

It follows that a patient who has been exposed to carbon tetrachloride, particularly if there was concomitant alcohol ingestion, deserves close observation. Nausea and vomiting may occur without evidence of involvement of the liver or kidneys. Elevation of blood pressure and back pain suggest renal involvement. The early laboratory investigation should include examination of the urine, which in a typical case of acute tubular injury is scanty, has a specific gravity of 1.010-1.015 and contains albumin and many red and white cells and casts. Under these circumstances azotæmia will be present. Liver function should be studied by measuring the serum bilirubin and cephalin flocculation or similar test.

The clinical course of the acute renal failure is similar to that which follows shock or trauma

except that in the case of carbon tetrachloride the oliguria may be delayed 1-3 days after exposure, the oliguric phase is commonly shorter, lasting 6-14 days, and the biochemical changes are therefore usually less severe.[7]

If vomiting and diarrhœa have been severe, it may be difficult to distinguish between renal damage and simple dehydration since both lead to oliguria. Rehydration must be carried out cautiously. If toxic renal damage exists, pulmonary œdema is easily produced. However some intravenous fluids should be given and in view of the possibility of liver involvement these should include 100-200 g. of glucose. By proceeding cautiously with rehydration, checking for early signs of œdema and watching the urine output, it is usually possible to distinguish between acute renal failure and simple dehydration.

The treatment of acute renal failure will not be discussed here. There are many excellent papers on the subject.[7-12] Suffice it to say that these patients usually respond to conservative therapy and seldom need any form of dialysis. However they should be in a hospital where they can be followed by proper electrolyte studies. The principal danger is administration of excessive amounts of water and electrolytes during the oliguric phase leading to death from pulmonary œdema.[7, 13, 14]

SUMMARY AND CONCLUSIONS

The hazards of carbon tetrachloride exposure have been discussed and illustrative cases presented. Carbon tetrachloride is extremely nephrotoxic. In fact it is one of the commonest causes of acute renal failure. The probability of renal damage is increased by concomitant ingestion of alcohol.

There are hazards in faulty diagnosis and treatment, but the greatest hazard is the lack of awareness of the dangers inherent in the use of carbon tetrachloride. The main problem is prevention of exposure. Carbon tetrachloride should not be sold without suitable warning labels. Indeed the warnings should be strong enough to discourage its use in the household and small industries. In many large industries less toxic compounds now replace carbon tetrachloride as a solvent and dry cleaner. These same substitutes would serve as well for smaller industries and in the home. Clearly it is the responsibilty of governments to protect the public against such hazards. It is the duty of our Association to remind governments of their responsibility in this regard.

We wish to thank Dr. G. J. Cassidy for permission to publish Case 5.

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RÉSUMÉ

Dans le présent article, les auteurs examinent les dangers de l'exposition au tétrachlorure de carbone et présentent plusieurs cas en exemple. Le tétrachlorure de carbone est extrêmement néphrotoxique; de fait, il est l'une des causes les plus communes de défaillance rénale aiguë. La probabilité d'une lésion rénale est augmentée quand il y a eu en même temps ingestion d'alcool.

Un mauvais diagnostic et un traitement défectueux présentent un certain inconvénient, mais le danger le plus grand réside dans l'ignorance des risques que l'on court en se servant du tétrachlorure de carbon. Le grand problème est d'empêcher d'y être exposé. Le tétrachlorure de carbone ne devrait pas être vendu sans étiquette comportant une mise en garde; en fait, ces avertissements devraient être assez explicites pour en empêcher l'usage au foyer ou dans les petites industries. Dans beaucoup de grandes usines, on a remplacé le tétrachlorure de carbone par des composés moins toxiques comme dissolvants en général et dans le nettoyage des vêtements. Ces substituts pourraient être utilisés tout aussi bien dans les petites manufactures et au foyer. Il appartient évidemment aux autorités de protéger le public contre ces risques. C'est le devoir de notre Association de rappeler aux gouvernements leur responsabilité à ce sujet. M.R.D.

PREVENTION OF INHALED VOMIT DURING OBSTETRIC ANÆSTHESIA

To prevent inhalation of gastric contents during obstetric anæsthesia, the practice at Guy's Hospital, London, is to give before anæsthesia a solution of apomorphine intravenously to induce vomiting and after complete emesis to administer atropine sulfate grain 1/50 by intravenous injection. It is hoped that the routine adoption of the simple technique described will effectively remove the greatest hazard in obstetric anæsthesia and will be acceptable to both obstetrician and anæsthetist—J. M. Holmes, *J. Obst. & Gynæc. Brit. Emp.*, 63: 239, 1956.

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EFFECT OF PROPANTHELINE BROMIDE (PRO-BANTHINE) ON FLUID AND ELECTROLYTE LOSS IN DOGS WITH PYLORIC OBSTRUCTION*

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THE IMPORTANCE OF FLUID and electrolyte loss from the gastro-intestinal tract is well recognized. The loss of fluid and electrolytes by such channels as skin and kidney is well regulated by body mechanisms, whereas the abnormal loss which occurs from the intestinal tract in vomiting of pyloric obstruction is uncontrolled and may rapidly lead to severe imbalances. Poth,[1] in observing 30 cases of proved duodenal ulcer with pyloric obstruction, illustrated the importance of controlling the loss of fluids and electrolytes via gastric secretion by inhibiting the secretory activity. This inhibition was effected by the parasympatholytic drug, Banthine (methantheline bromide). Kowalewski *et al.*[2] in our laboratory investigated the efficacy of Pro-Banthine (propantheline bromide) as an anti-ulcer agent in rats, and found that Pro-Banthine not only prevented ulceration in rats in which the pylorus had been ligated, but also decreased the secretion of gastric juice and protected against fluid and electrolyte loss. It was postulated that these results might have some clinical application in high intestinal obstruction, and as a result this further study was undertaken. The purpose of this work was to study the effect of Pro-Banthine on fluid and electrolyte loss, when administered to dogs with pyloric obstruction.

METHODS

Adult mongrel dogs varying in weight from 12-20 kg. were used. One group of eight dogs comprised the control series; another group of eight dogs was given Pro-Banthine intramuscularly in a dose of 5 mg. per kg. twice daily beginning immediately after pyloric obstruction.

Preparation of dogs.—Preoperatively the dogs were fed on a commercial food diet except for 48 hours immediately before operation when they were given water ad libitum and milk and syrup equivalent to 600 calories per day. They were conditioned to standing in Pavlov slings three to four days before operation. Their weights were recorded before operation and daily thereafter. Intravenous Nembutal was used routinely as an anæsthetic. The pylorus was obstructed by compressing it between two buttons as in Fig. 1. A metal cannula was inserted into the stomach two inches (5 cm.) proximal to the obstruction and brought externally through a subcostal stab wound. Rubber condoms attached to this cannula were used for collecting all the gastric juice. Cystotomy was done and the urine collected through a Malecot catheter. Following the obstruction the dogs were again suspended in the Pavlov slings and were given no food or water throughout the experiment.

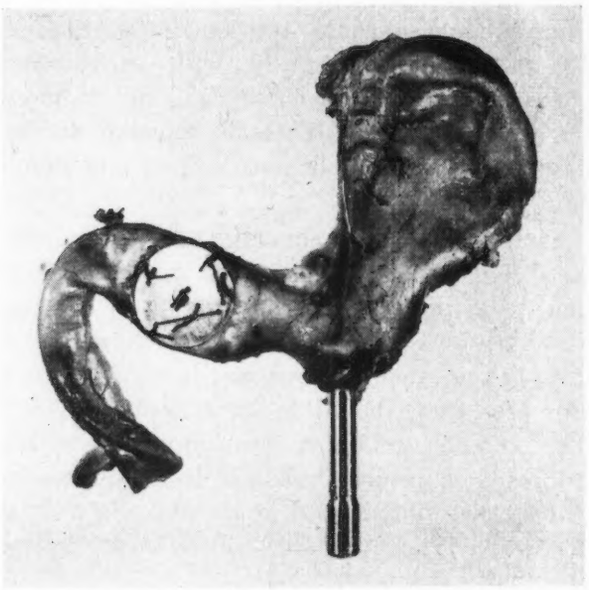

Fig. 1.—Stomach and portion of duodenum showing buttons compressing the pylorus and the metal cannula used for collecting the gastric juice.

Sampling.—Each morning blood was drawn for serum electrolyte and CO_2 content determinations (base line blood chemistry was done 24-48 hours preoperatively), and gastric and urine collections were measured for volume and aliquots taken for chemical analysis.

Clinical observations.—The clinical condition of the dogs was recorded. The number of hours elapsing between operation and death of each dog was recorded and routine autopsies were

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TABLE I.—ELECTROLYTE VALUES (MEAN AND S.D.) OF SERUM, GASTRIC JUICE AND URINE, IN PROTECTED (P) AND CONTROL (C) DOGS

Day	CO_2 content*		Chloride*		Potassium*		Sodium*	
	P	C	P	C	P	C	P	C
				Serum				
Base	21.9	22.7	112.6	110.7	4.7	4.6	146.1	148.3
Line	±1.4	±1.9	±3.1	±3.2	±0.5	±0.6	±2.5	±3.1
1	20.9	23.0	111.2	109.3	4.4	3.9	145.7	146.7
	±2.3	±2.9	±2.8	±3.4	±0.3	±0.6	±3.6	±3.5
2	21.3	24.9	110.2	104.1	4.4	3.7	146.5	149.3
	±1.7	±3.5	±2.2	±3.8	±0.4	±0.3	±3.5	±2.6
3	21.7	27.1	108.8	101.9	4.4	3.5	145.6	149.3
	±2.2	±2.7	±2.3	±3.8	±0.4	±0.3	±4.9	±2.8
4	22.2	29.8	107.8	98.8	4.3	3.4	....	149.5
	±2.6	±2.6	±2.0	±6.3	±0.3	±0.4	....	±1.7
				Gastric juice				
	Volume (ml.)		Chloride*		Potassium*		Sodium*	
1	38.0	241.0	3.9	45.4	0.5	2.5	3.5	23.5
	±28.2	±174.0	±1.8	±12.6	±0.4	±1.5	±1.9	±20.7
2	98.0	363.0	12.6	52.9	0.8	4.2	14.3	25.5
	±40.0	±122.0	±4.2	±8.3	±0.5	±1.8	±6.1	±9.6
3	113.0	212.0	18.3	33.5	1.0	2.9	11.8	22.7
	±44.0	±66.0	±7.5	±5.3	±0.4	±2.1	±8.7	±11.7
4	93.0	195.0	11.0	26.1	0.7	2.0	8.8	13.9
	±50.0	±105.0	±6.4	±4.7	±0.4	±1.3	±6.7	±5.0
5	80.0	149.0	9.0	26.4	0.7	1.3	8.6	7.4
	±25.2	±68.0	±5.1	±11.8	±0.3	±0.6	±3.3	±3.5
				Urine				
1	206.0	223.0	2.7	2.4	11.1	11.2	10.9	21.7
	±125.0	±106.0	±1.4	±1.4	±4.6	±4.5	±11.1	±14.7
2	162.0	187.0	3.4	2.4	5.7	9.9	3.6	4.2
	±80.0	±46.0	±2.2	±1.3	±3.8	±2.5	±3.6	±2.3
3	161.0	181.0	3.5	3.1	6.8	9.2	2.7	2.2
	±47.0	±40.0	±1.5	±0.8	±2.0	±1.6	±0.8	±1.7
4	158.0	164.0	4.0	3.3	6.8	7.1	2.9	1.5
	±53.0	±67.0	±1.3	±1.3	±2.1	±3.0	±2.3	±0.8
5	148.0	82.0	3.5	1.4	6.6	2.9	2.1	1.0
	±45.0	±49.0	±2.2	±0.7	±2.1	±1.9	±1.5	±0.9

*Milliequivalents per litre in serum and total milliequivalents in the gastric juice and urine.

done. At autopsy all the obstructions were tested carefully for gross leaks by means of water under pressure. One dog not in the series was obstructed in a similar manner and 24 hours later given barium by stomach tube, then followed with 24-hour flat films of the abdomen to demonstrate the obstruction. The film seen in Fig. 2 was taken five days after pyloric obstruction.

Chemical determinations. — The sodium and potassium concentrations of the serum, urine and gastric juice were measured with the Baird flame photometer; the chloride concentrations after the method of Schales and Schales;[3] the free acid of the gastric juice by titration with 0.1 N sodium hydroxide to the turning point of Toepfer's reagent; and the serum CO_2 content by using Van Slyke's gasometric apparatus.

Fig. 2.—Flat film of the abdomen taken five days after operation. Barium administration demonstrates complete obstruction.

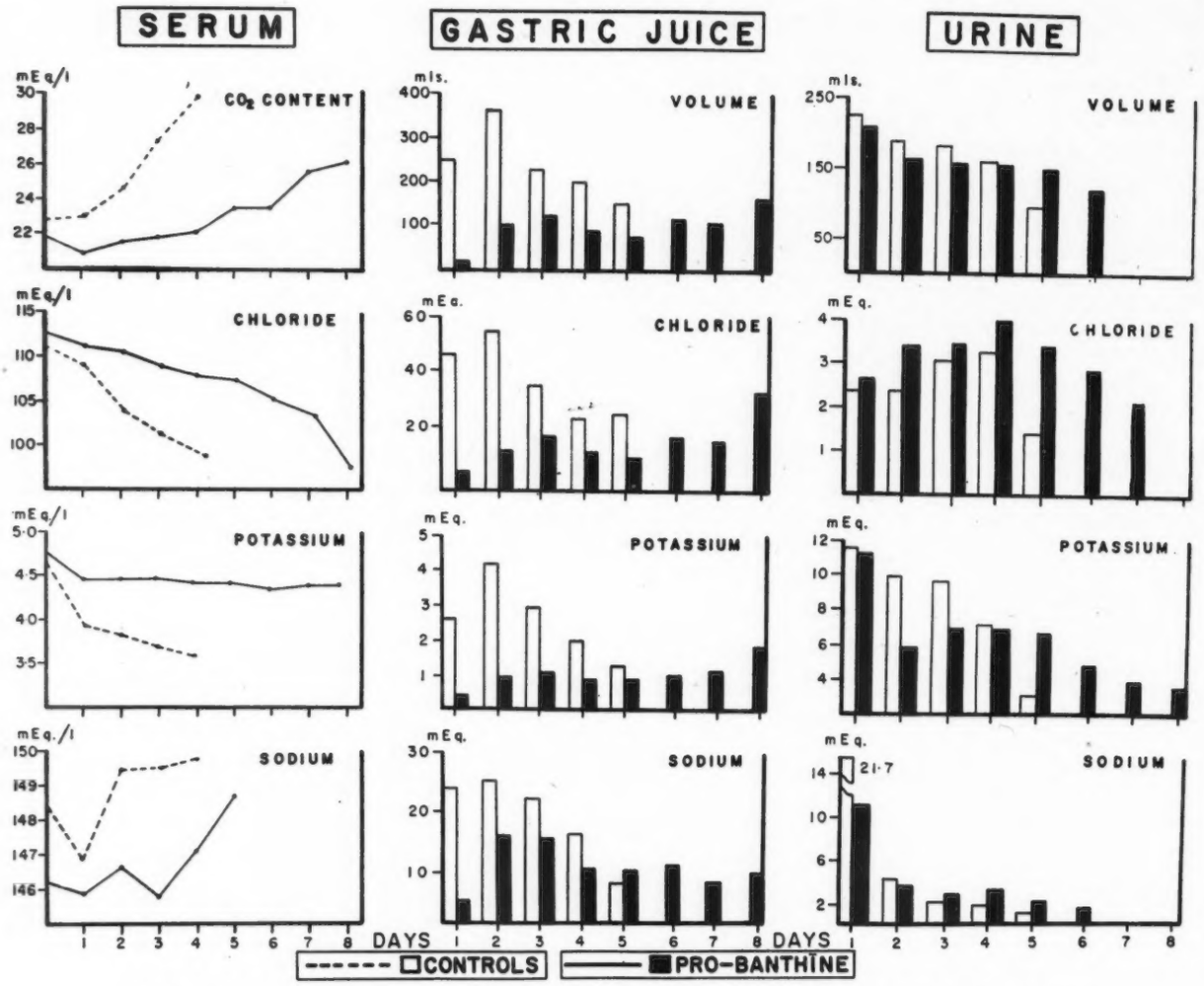

Fig. 3.—Results of electrolyte determinations in the control and Pro-Banthine groups of dogs.

RESULTS

The findings within each group of dogs were consistent and the average of the values within each group was statistically significant within the limits seen in Table I.

Clinical.—It was found that the protected group of dogs were in much better condition two to three days after the obstruction than were the control dogs. The average survival time for the control group was 113 hours, whereas in the protected group it was 165 hours. This represents a significant increase in the survival time of 52 hours or 46%.

Serum.—The serum electrolyte and CO_2 content values are expressed on an average basis for the eight dogs within each group for every 24 hours as in Fig. 3. The two groups are compared for an equal period of five days after pyloric obstruction, at which time all the control dogs were dead.

The serum chloride values showed a more marked decrease in the control group, falling 12 mEq. per litre in four days versus a drop of 5 mEq. per litre in the protected group. A concomitant rise in the CO_2 content occurred, revealing a rapid elevation in the control group while remaining at an almost constant normal level in the protected group. The potassium content of the serum decreased in the control group while remaining at an almost constant normal level in the protected group. The serum sodium levels fluctuated at first, finally showing a slight elevation in both groups.

Gastric juice.—In the gastric juice the values are also expressed as averages for the dogs within each group (Fig. 3). The volume of gastric juice lost in the control group is far greater than that lost in the protected group. The total average secretion for the controls was 1200 ml. in five days against a secretion of 470 ml. in the pro-

tected group. This represents 61% less volume secreted by the protected group.

There was a marked difference in the chloride secretion. The control group lost an average of 184 mEq. of chloride in five days while the protected group lost 55 mEq., representing a saving of 70% in the protected group.

The potassium loss into the gastric juice of the controls averaged 8.2 mEq. against 4.3 mEq. for the protected group. This means that the protected group lost 46% less potassium.

Sodium loss in the gastric juice of the controls was 50% higher than that found in the protected group of dogs.

No free hydrochloric acid was found in over 97% of the samples from the protected dogs until after the fifth postoperative day, whereas in the control dogs it was a constant finding.

Urine.—In the urine no significant difference between the two groups was found (Fig. 3). Both groups revealed daily electrolyte concentration changes which were compatible with the conservation of body salts. For example, after pyloric obstruction there was a precipitous fall in the urine sodium concentration, and the potassium concentration fell gradually, whereas the chloride concentration showed no appreciable change.

DISCUSSION

The results found in the control group of dogs demonstrates the well-known fact that high intestinal obstruction can lead to large fluid and electrolyte losses via the gastric juice. The pyloric obstruction in these dogs resulted in loss of large amounts of hydrochloric acid and sodium and potassium chlorides. Due to the larger loss of chloride ion, more base was available to combine with bicarbonate, resulting in an elevated serum CO_2 content. The resulting plasma picture is one of hypochloræmic alkalosis.

In addition, due to the fact that the concentration of sodium is much less in gastric juice than in plasma, large losses of gastric juice result in a much greater proportion of water loss than of sodium, with a concomitant decrease in the extracellular fluid. This is compensated for in part by the transfer of water out of the cells leading to intracellular dehydration. With this water loss there is also a loss of intracellular potassium, and Cooke *et al.*[4] showed that in potassium deficiency of this kind there is a transfer of sodium into the cells which maintains to some extent the intracellular cation content; they found that up to 50% of the potassium lost in this manner from the cells was replaced, two-thirds by sodium and one-third by hydrogen ion.[4, 5] In association with this mobilization of cell water, potassium is lost in the urine as the result of tissue catabolism secondary to starvation. With continued vomiting the result may be an excessive loss of potassium intracellularly and the production of hypokalæmic alkalosis in addition to the pre-existing hypochloræmic alkalosis. Cooke *et al.*[4] further suggest that the alkalosis is confined to the extracellular fluid and is associated with an intracellular acidosis due to the transfer of hydrogen ion into the cells in part replacement of their lost potassium. Also, it is felt that with continued intracellular potassium depletion there is an increase in the renal reabsorption of bicarbonate which further aggravates the plasma alkalosis.[6, 7]

Pro-Banthine, as shown in previous investigations,[8, 9] diminishes the gastric juice secretion and acidity. This in turn conserves water and electrolyte. The fact that less water and chloride are lost initially in the protected dogs, appears to delay the onset of serum bicarbonate increase, which in turn diminishes the transfer of sodium into the cells. By diminishing this intracellular shift, potassium loss from the cells and hence from the body via the urine is also diminished. In essence, the movements of ions between fluid compartments as described above are delayed, and we feel that this is demonstrated by our results shown in Fig. 3. It is noted that the serum sodium levels are slightly elevated in both groups. This might reflect an alteration in concentration due to changes in hydration, rather than an absolute increase in the plasma sodium. Darrow refers to this as "hypertonic dehydration".[10]

SUMMARY AND CONCLUSIONS

The purpose of this study was to investigate the effect of Pro-Banthine on fluid and electrolyte loss in dogs with pyloric obstruction.

Two groups of eight dogs each underwent obstruction at the level of the pylorus. One group received intramuscular Pro-Banthine daily. Gastric juice and urine were collected

by means of a cannula and rubber catheter respectively. No food or water was given postoperatively. Serum electrolyte determinations together with serum CO_2 content and electrolyte determinations on the gastric juice and urine were done daily. It was found that:

1. Pro-Banthine effectively reduced gastric secretion and acidity.
2. Total loss of electrolytes into the gastric juice of the dogs protected by Pro-Banthine was less than one-half that lost in the control group.
3. Serum electrolyte levels were significantly lower and the serum CO_2 content was significantly elevated in the unprotected group.
4. It was concluded that these changes in serum electrolytes and CO_2 content reflect the electrolyte loss into the gastric juice.
5. Urine changes between the two groups were not significant.
6. It is considered that the increased survival time is due to the conservation of fluid and electrolyte by Pro-Banthine.

These observations illustrate the effectiveness of one anti-cholinergic drug in controlling the loss of fluids and electrolytes via gastric secretion by decreasing the secretory activity. The use of such a substance as an adjunct to treatment in the preoperative preparation of patients with benign or malignant pyloric obstruction would appear to be justified.

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RÉSUMÉ

Les auteurs de ce travail se proposèrent d'examiner les effets du bromure de propanthéline (Pro-Banthine) sur la perte d'électrolytes et de liquides chez les chiens portant une obstruction du pylore.

Deux groupes de 8 chiens subirent une obstruction expérimentale au niveau du pylore. Les chiens d'un groupe reçurent de la Pro-Banthine intramusculaire, chaque jour. Le suc gastrique fut recueilli au moyen d'une canule et l'urine au moyen d'un cathéter de caoutchouc. Après l'opération, on ne donna ni aliments ni eau. Chaque jour, on fit des relevés des électrolytes du sérum et de la réserve alcaline ainsi que des électrolytes du suc gastrique et de l'urine. On remarqua les faits suivants: (1) la Pro-Banthine diminue effectivement la sécrétion et l'acidité du suc gastrique; (2) la perte totale des ions dans le suc gastrique des chiens protégés par la Pro-Banthine était moins de la moitié de la perte du groupe témoin; (3) les taux d'électrolytes du sérum étaient plus bas et le CO_2 du sérum plus élevé chez les chiens du groupe témoin que chez les autres; (4) on conclut que ces changements ioniques du sérum reflètent la perte d'électrolytes dans le suc gastrique; (5) les différences dans l'urine des deux groupes étaient insignifiantes; (6) on attribue la prolongation de la survie à la conservation des liquides et des électrolytes par l'effet de la thérapie.

Ces observations démontrent l'efficacité d'une drogue anti-cholinergique à contrôler la perte des liquides et des électrolytes dans le suc gastrique en en diminuant la sécrétion. L'emploi d'une telle substance comme adjuvant du traitement préparatoire à l'opération, dans les cas d'obstruction bénigne ou maligne du pylore, semblerait justifié. M.R.D.

ACUTE BENIGN NON-SPECIFIC PERICARDITIS WITHOUT PERICARDIAL FRICTION RUB

Because of the close similarity of acute benign pericarditis to acute coronary occlusion and myocardial infarction, it is of the utmost importance to distinguish them, since the prognosis and treatment are necessarily different. The first of these two diseases is usually followed by complete restoration to health without sequelæ, and the use of anticoagulants in acute pericarditis, such as is becoming customary in myocardial infarction, could prove disastrous.

The diagnosis of acute nonspecific pericarditis is suggested by the following triad of symptoms: (1) precordial pain aggravated by cough as well as by bodily and respiratory movements; (2) signs of infection; (3) pericardial friction rub. The diagnosis can be confirmed by serial electrocardiographic changes. A pericardial friction rub that appears early and persists for several days should be considered an important sign, but is not present or detectable in all cases. Its complete absence in 4 of the 5 cases presented in this study indicates that the condition can exist without this sign.

The possible causes may be viral, allergic or rheumatic. The principal symptom, thoracic pain, may indicate pleurisy, pneumothorax, an acute abdominal disorder, or a coronary occlusion. Cardiac enlargement, due to the accumulation of fluid in the pericardial sac, rather than dilatation of the cardiac muscle, can occur. The condition is completely reversible. Leukocytosis and an accelerated erythrocyte sedimentation rate are observed early. In pericarditis, the sedimentation rate falls as the acute infection subsides, but in myocardial infarction it usually remains high throughout the course of the illness. The most important clues to nonspecific pericarditis are the serial electrocardiographic changes. These are more diffuse than in myocardial infarction, despite the relative well-being of the patients, and they return to normal in a short period of time.

There is no definitive therapy for idiopathic pericarditis, and, since all patients recover completely without sequelæ, it is difficult to make an accurate assessment of any specific remedy.—M. L. Gelfand and L. Goodkin, *Ann. Int. Med.*, 45: 490, 1956.

EARLY DIAGNOSIS OF DETERIORATION AFTER RADIATION THERAPY OF CARCINOMA OF THE CERVIX*

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IT HAS BEEN OUR POLICY since 1949 in the treatment of carcinoma of the cervix to give full radiation therapy in all cases and then wait to see what happens. If the growth does not respond well, or if after a good response there is evidence of recurrence, we undertake radical pelvic surgery based on the extended Wertheim operation, if this is still possible.

This procedure confers two important benefits on the woman who responds well to radiation—as about 40% do: it enables her to avoid a very serious operation that in some cases carries unhappy sequelæ in the way of fistulæ, etc., and it leaves her with a vagina which, if she uses it faithfully, remains satisfactory for coitus—something that the operation certainly does not do.

In deciding to follow such a policy it was realized that there was a very definite onus on us to diagnose at the earliest possible moment failure of response to radiation, or later recurrence. In the first three years we did only 9 radical operations, but in the same period we treated 183 patients, of whom 107 died of carcinoma. In that time we attempted the operation on 5 others but had to abandon it because of metastases in lymph nodes along the aorta or extension to the pelvic side walls. Of the 107 patients who died there were over 50 who first came to us in Stages I and II, on whom we might have operated as against the 9 on whom we did and the 5 on whom we tried. Our failure to operate was in large part the result of our slowness in recognizing the signs of deterioration until the situation was too advanced for surgery. Since this constituted a most pitiful attack on the problem, we began to study our cases of recurrence and poor response more closely, in order to pick up the earliest signs of deterioration.

These appeared to be:

(a) An otherwise inexplicable loss of weight.

(b) Failure of the vaginal vault to epithelialize, or a subsequent breakdown once epithelialization had occurred.

(c) Extension of induration from the cervix towards the lateral pelvic walls since the last examination.

Our study encompasses three types of cases:

1. All the patients whom we have operated upon—60.

2. Those on whom we attempted the operation since 1952—10.

3. Those who first came to us in Stages I and II but who have died without benefit of operation since 1952—32.

Of the 60 cases in which we completed the operation, 21 were done within three months of irradiation because of poor response, or because for one reason or another it had been impossible to give a proper radiation dosage; the other 39, done more than three months after radiation after an initial favourable response, we considered to be recurrences.

Loss of weight.—Although this was often the first sign of deterioration, and sometimes the only sign, it was by no means a constant finding (see Tables I and II). This inconstancy was more evident among patients operated on than among those who died and those on whom operation was attempted and abandoned. In the latter group 29 out of 36 lost weight, whereas in the operative group only 29 out of 60 did so. In the two groups no less than 23 actually gained weight. There were 19 cases in the operative group in which when the specimen was examined microscopically after operation no carcinoma could be found; in 10 of these there was a weight loss, and in the remainder either no change in weight or a weight gain. Weight seemed more likely to be lost when there was a recurrence than when there was a poor immediate response. We feel that the reason for such a high percentage of weight loss among patients who died of cancer is that a fair number of these did not return for a check-up until a considerable lapse of time after their due date, and were then in an advanced stage of deterioration. The figures shown under the operative cases in Table I are therefore more apt to be those present where patients return promptly at the appointed time for a check-up, and in whom the deterioration is early.

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TABLE I.—APPLICATION OF CRITERIA OF DETERIORATION IN CASES OPERATED UPON

Group	N.C.*	Weight Gain	Weight Loss	Slough or ulcer Yes	Slough or ulcer No	Extension Yes	Extension No
Poor response (21 cases)	7	8	6	21	0	10	11
Recurrence (39 cases)	3	13	23	34	5	13	26
Total (60 cases)	10	21	29	55	5	23	37

*N.C.—No change.

Table II shows the presence of the criteria at the first examination at which it was determined that deterioration had occurred, in those cases in which operation was attempted but could not be completed, and in which the patient died without benefit of operation.

TABLE II.—PRESENCE OF CRITERIA IN PATIENTS WHO DIED OR ON WHOM OPERATION COULD NOT BE COMPLETED

Group	N.C.	Weight Gain	Weight Loss	Slough or ulcer Yes	Slough or ulcer No	Extension Yes	Extension No
Poor response (15 cases)	2	0	13	11	4	14	1
Recurrence (21 cases)	4	1	16	9	12	20	1
Total (36 cases)	6	1	29	20	16	34	2

Slough or ulcer at vaginal vault.—A failure of the vaginal vault to epithelialize, or the persistence of a friable ulcer, or a breakdown of the vault following complete epithelialization, occurred in 55 of the 60 operative cases, but in only 20 of the 36 where the operation had to be abandoned or the patient died without operation. If this slough was whitish, it did not necessarily mean failure of response or recurrence. Such a slough, even when it occurred some months after complete epithelialization, sometimes healed over again. More often than not, however, it did mean recurrence and therefore constituted an important early sign. When it was the only sign present, we usually did a biopsy. If this was negative, we had the woman return in a month for a further check-up. If the slough was still present or was larger, or if there was some loss of weight, we operated.

If the slough was yellowish in colour and the discharge from it had a foul odour, we operated whether the biopsy was negative or positive, since it had been our experience that this type of slough is practically always a sign of deterioration. As a rule the bases of these white or yellow sloughs were not friable.

Extension of cervical induration towards pelvic walls.—Although this sign was present in all but two of the patients who died without operation or on whom the operation could not be completed, it seemed the least reliable sign in those cases in which operation was completed. It is not easy after an interval of three months or more to detect minor differences in pelvic induration, even when the previous findings are carefully written down. While such changes were detected in 23 out of our 60 operative cases, it is our impression that on the whole these were minor changes.

We feel furthermore that what probably often happened in the patients who died without benefit of operation was that, in the absence of a slough at the vault, we missed these minor changes and sent the patient home for three or four months; when she next returned, the induration had extended to the pelvic walls. In other words, deterioration was detected earlier when there was a slough or ulcer at the vault than when there was a minimal amount of extension of growth outwards from the cervix.

By making careful use of the diagnostic criteria above mentioned, we have increased our operative rate considerably since 1952, and the number of women who have, being operable when we first saw them, died of cancer without benefit of operation has dropped by two-thirds. Nevertheless, we have to admit the following: (1) in those same years 28 women have died of cancer without benefit of operation who were in Stages I and II when first seen by us; (2) of the 10 patients on whom we had to abandon the operation after opening the abdomen, all were in Stages I and II when first seen; (3) of those on whom we could complete the operation, we had to remove the bladder in 10 and the rectum in 2; all of these patients were in Stages I or II when first seen.

A further fact should be mentioned. Of the operative specimens removed, all of which were gone over fairly thoroughly by the pathologist, 19 showed no evidence of remaining carcinoma. While all of these were originally proven cases of carcinoma, and while two of the patients have subsequently died of recurrence, and a preliminary biopsy was positive in six, there nevertheless remain 11 cases in which we cannot be sure that the operation need have been done. Of these 11 cases the preoperative biopsy was negative in two and was not done in the remainder.

How valuable did the biopsy prove? Our biopsy technique is to cone out under anæsthesia the entire circumference of the sloughing

or ulcerated area, together with a slight rim of normal tissue beyond. It is therefore a reasonably thorough procedure.

TABLE III.—RELATION OF BIOPSY TO SURGICAL SPECIMEN FINDINGS

Group	Biopsy			Surgical specimen	
	Not done	Neg.	Pos.	Neg.	Pos.
Poor response (21)	4	1	16	5	16
Recurrence (39)	17	5	17	14*	25

*Of these, two died of recurrence.

We found a positive biopsy and negative surgical specimen more often among the "poor response" than the "recurrence" cases.

TABLE IV.

Biopsy result		Surgical specimen result	
		Neg.	Pos.
Positive	33	6	27
Negative	6	2	4
Not done	21	11	10

Table IV shows that the results of the biopsy examination when checked with the surgical specimen are rather unsatisfactory. Of the 33 positive biopsies 6 were associated with a negative specimen. Of the 6 negative biopsies 4 were associated with a positive specimen. Of the 21 cases in which no biopsy was done the specimen was negative in 11 and positive only in 10, but of the 11 in which it was negative 2 patients died of known recurrence. One of the main reasons why there is such a large number of cases in which a biopsy was not done, is that—since the value of the biopsy was proved so uncertain—it was felt that the operation should be done regardless of the biopsy results if the other clinical evidence of deterioration was clearly present.

We have not used cytological studies as an aid in this difficulty, since it was our impression from reading the literature that nothing as yet discovered in that line could be truly called satisfactory, the possible margin of error being high.

It would seem therefore that, for those following the scheme that we do of operating only on cases of poor response to radiation or later recurrence, the decision to operate must still depend largely on the three clinical signs above described. It must also be admitted that these signs, whether appearing singly or in combination, in their earliest manifestations are highly uncertain indicators. Not having yet made the decision to operate on all cases that come to us originally in Stages I and II immediately after or even without radiation therapy, we now find ourselves: (1) bringing more and more patients back for a check-up at shorter intervals during the first year following radiation, and (2) tending to operate on every case in which there is the least suspicion of deterioration.

SUMMARY

1. It is our policy to treat cases of cancer of the cervix with radiation and to operate only on those which either do not respond or, after response, recur.

2. Our early criteria of failure of response or recurrence are: (a) an inexplicable loss of weight, (b) slough or ulcer at the vaginal vault, (c) extension of induration from the cervix towards the pelvic walls.

3. Applying these criteria at their earliest manifestation, we have operated on 51 cases since 1952, but in this period have had to abandon the operation on 10 occasions because of extension, and have had 28 women die of recurrence, all of whom were in Stages I or II when first seen.

4. Of those on whom we did operate a fair proportion, as shown by involvement of bladder and rectum, had passed beyond the Stage I or II in which we first saw them.

5. By and large, biopsy examination was not of great value in determining failure of response or recurrence.

RÉSUMÉ

Dans les cas de cancer du col, les auteurs de cette communication ont adopté comme règle de conduite de commencer d'emblée la curiethérapie et de n'avoir recours à l'intervention chirurgicale que dans les récidives ou dans les cas qui ne manifestent aucune amélioration des effets du radium. Ces cas réfractaires sont dépistés d'après les indications cliniques suivantes: une perte pondérale ne pouvant être attribuée à aucune autre cause; une ulcération de la voûte du vagin et, enfin, un prolongement de l'induration du col aux parois du bassin. En se basant sur ces signes, les auteurs ont eu à opérer 51 malades depuis 1952; ils ne purent procéder à l'intervention chez 10 malades devenues inopérables à cause de l'étendue des lésions. Vingt-huit malades moururent de récidives après avoir été repérées alors qu'elles étaient encore au stage I ou II. Chez les opérées, la vessie dut être réséquée dans 10 cas et le rectum dans 2, montrant ainsi qu'elles avaient dépassé les stages où était leur néoplasme à l'époque où le diagnostique avait été posé. Les auteurs n'attribuent pas grand'importance à la biopsie dans la recherche des récidives ou des cas réfractaires à la curiethérapie. M.R.D.

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SYSTEMIC INVOLVEMENT IN CHRONIC LUPUS ERYTHEMATOSUS*

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DERMATOLOGISTS have taken an important part in describing the cutaneous and systemic manifestations of lupus erythematosus. Problems encountered in the management of this disorder have emphasized the intimacy of cutaneous and internal pathology. Lupus erythematosus has now become an important problem for all who practise medicine.

Relationship of the chronic cutaneous forms of the disease to the frankly systemic has been generally accepted by the dermatological world, but some still question this relationship. Indeed, there are those who feel that the chronic discoid and systemic forms are two distinct clinical entities.[1]

Extensive and voluminous reports have been made of the clinical and laboratory features in frank systemic forms of the disease. However, the assumption that lesions in the chronic forms are confined to the skin has resulted in a paucity of systemic investigations in these patients. Because of the lack of substantiating evidence, proponents of a unitarian concept of lupus erythematosus have been challenged by those who feel that this concept is based on clinical impressions alone. It was therefore thought useful to investigate such patients as extensively as those with frank systemic forms of the disease.

CLASSIFICATION OF LUPUS ERYTHEMATOSUS

Numerous attempts have been made to classify the types of this disorder. Classification based on the morphology of cutaneous lesions has been inadequate because of the variability of lesions and because they may be entirely lacking. Etiological classification is not possible so long as the etiological agent or agents are unknown.

O'Leary[2] suggested a didactic classification of: (1) the chronic discoid type, with lesions on the face and head; (2) the chronic disseminated or generalized discoid type, with lesions beyond the face and head; (3) the subacute disseminated type, and (4) the more severe acute disseminated type. The first two types are usually considered to be primarily cutaneous conditions, while systemic involvement becomes increasingly important in the latter two types. Another classification has been proposed by Michelson.[3] It includes the types already described with two additions: (1) the acute, localized, œdematous type, and (2) the protracted systemic type. Lesions of the acute localized type are circumscribed discs which feel like elastic nodules; they may disappear completely or may be transformed into the discoid form. The patient with the protracted systemic type has a prolonged prodromal period with indefinite symptoms of undermined health. The presence of the L.E. cell phenomenon is the only definite means of diagnosis. If this phenomenon is not present, the diagnosis is presumptive. Whatever classification is utilized, it must be an arbitrary one based for the most part on the clinical course of the disease and on the clinician's concept of the disorder.

USE OF THE TERMS "DISSEMINATED" AND "CHRONIC"

As different fields of medicine became interested in lupus erythematosus, a considerable amount of confusion arose over the use of the term "disseminated". Those who followed Kaposi's original usage applied it to widespread skin lesions accompanied by various symptoms.[4] Others used it to connote internal involvement with constitutional symptoms and signs irrespective of the nature of the cutaneous lesions. Some feel that this term is too misleading and that it might be replaced by the term "systemic" in those instances where constitutional symptoms and signs overshadow skin manifestations.[4]

In this paper the term "chronic" will be restricted to patients with chronic cutaneous forms of the disease as described in the first two types of O'Leary's classification.

CLINICAL ASPECTS OF CHRONIC LUPUS ERYTHEMATOSUS

It has been said that there is no characteristic primary cutaneous lesion for any form of lupus erythematosus, and what is looked upon as an early or first sign is in reality accentuation of an uncharacteristic beginning.[5] Various-sized plaques characterize the chronic forms. These begin as papules usually preceded by varying

*This study was conducted while the author was a medical fellow at the University of Minnesota, Division of Dermatology (H. E. Michelson, M.D., Director).

amounts of œdema and erythema. The lesion is a disc of chronic inflammation which progresses peripherally and heals with central atrophy and scarring. Early lesions are covered by adherent greyish-brown scales, extending into follicular and sweat gland openings. These changes are often accompanied by some degree of telangiectasis and pigmentation.

The usual sites of involvement by the chronic discoid form are the bridge of the nose, flush areas of the face (butterfly region), ears, scalp and the mucous membranes of the lips and mouth. In the chronic disseminated form the lesions extend beyond the sites involved by the chronic discoid form. The sides and "V" of the neck, arms and hands are frequently involved. These sites of predilection are areas usually exposed to sunlight and trauma. With the exception of the scalp, covered areas are infrequently involved.

Variations from the usual forms have been described. Bechet[6, 7] described the *hypertrophicus et profundus* type and a telangiectatic variety. Irgang[8] described a form somewhat similar to the *hypertrophicus et profundus* type which he termed lupus erythematosus profundus.

Clinical and Laboratory Findings in Subacute and Acute Systemic Lupus Erythematosus

It is not within the scope of this paper to consider in detail the clinical and laboratory findings in subacute and acute forms of the disease. Most of the patients afflicted with these forms have an initial ill-defined prodromal period with complaints of malaise, fatigue, weight loss, arthralgia and a low-grade fever. Various types of skin lesions may appear during the course of the disease.

The widespread pathological involvement of the connective tissue in various body organs and systems results in polymorphic symptoms, signs and laboratory abnormalities. The low-grade fever may become septic in character. Pain in the small joints may be the prominent complaint. Serosal involvement results in pleural, pericardial and peritoneal irritation. Involvement of the gastro-intestinal, respiratory, cardiovascular, genito-urinary and central nervous systems yields corresponding symptoms and signs. Lymphadenopathy may be prominent.

Laboratory examinations frequently reveal renal disturbances, with albumin, red blood cells, white blood cells and casts in the urine. The blood picture may show evidence of suppression of hæmatopoietic function with anæmia, leukopenia and thrombocytopenia. The erythrocyte sedimentation rate is usually elevated. There may be a reversal of the serum albumin-globulin ratio, with an increase in the gamma globulin fraction. It is usually possible to demonstrate L.E. cells in venous blood or bone marrow preparations.

Transition of Chronic Forms into Frank Systemic Forms

Most of the dermatological literature states that the localized and disseminated chronic forms are not accompanied by evidences of constitutional disturbances. However, it is generally conceded that transformation of the chronic into frank systemic forms may occur and that the relationship of these types is more than a casual one. There is no agreement regarding the incidence of this transition. Some feel that it is rare,[9] while others feel that it is not infrequent. An early study from the Mayo Clinic[10] revealed that 34% of their subacute and 33% of their acute cases started as the chronic discoid type. A later study by the same group[10] revealed that 17% of the subacute and 6% of the acute cases started in a similar manner. Wilson and Jordan[11] analyzed 221 systemic cases gathered from the literature and 44 of their own systemic cases. Their study revealed that chronic discoid lesions preceded systemic manifestations in 26% of 96 subacute and in 20% of 169 acute cases.

Cutaneous Pathology

There are similar alterations in the histopathology of skin lesions in the chronic, subacute and acute forms of lupus erythematosus. An early vascular disturbance is found with irregular dilatation of many vessels in the upper cutis. Œdema and connective tissue damage ensue. The œdema appears demarcated in the papillary portion of the cutis. It separates the connective tissue fibres and is followed by a patchy infiltration. These changes may be extensive enough to produce irreparable damage, or they may be less severe and reversible. Michelson[9] felt that the œdema of early lesions represented response to a toxic influence. If the toxic influence was partially overcome, infiltration occurred and the lesion became chronic discoid, while in the acute type the toxic

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influence predominated and much less infiltration took place. He felt that this and other histological similarities indicated that the two conditions may be different manifestations of the same disease.

The epidermis remains intact or shows secondary changes. The basal cells may become vacuolated, their nuclei becoming shrunken and misshapen. There is a thinning and straightening of the epidermis. Hyperkeratosis of varying intensity is usually present, and parakeratosis is uncommon. The œdema in the lower epidermis and upper cutis may be severe enough to cause intraepidermal and subepidermal vesicles. Epidermal appendages may be altered or destroyed by the infiltrate, which usually consists of leukocytes, lymphocytes and monocytes; giant cells and plasma cells are not often found. Involvement of the pilosebaceous apparatus leads to dilatation and follicular plugging. Similar plugging may be present in the sweat ducts.

Fibrinoid degeneration and hæmatoxylin bodies have come to be accepted as integral features in the pathology of systemic lupus erythematosus. The skin lesions of the more severe systemic types may manifest fibrinoid degeneration in the collagen fibrillæ, arterioles and larger vessels. Gueft,[12] reviewing skin biopsies, was able to demonstrate hæmatoxylin bodies in some sections from our patients with chronic forms of lupus erythematosus.

After an extensive study of skin specimens from patients with all forms of lupus erythematosus, McCreight and Montgomery[13] concluded that it was not possible to distinguish the various disease types histologically. They found that early lesions of the chronic discoid type may have the same histological appearances as well-developed lesions of the acute type. Added emphasis to the histological similarities has been given by the work of Stoughton and Wells.[14] Using the McManus periodic acid stain technique, they were able to demonstrate similar alterations of polysaccharide material in the corium of the chronic and acute types of skin lesions. Ellis and Bundick[15] recently summarized the prevailing views of histologists by stating that, "from the histologic point of view, there is little doubt that chronic discoid lupus erythematosus, subacute lupus erythematosus and acute lupus erythematosus are one disease".

EXPERIMENTAL OBSERVATIONS

There have been only infrequent reports of experimental investigations in patients with various forms of lupus erythematosus. The disease is commonest among patients living in temperate climates.[9] It is in these regions that peripheral vascular systems are subjected to a variety of traumata. The association of Raynaud's phenomenon with the disease and observations that the earliest histological changes occur in the vessels, would appear to indicate that investigations of the peripheral vascular system might yield pertinent information.

Lewis[16] explained that the predilection of the cutaneous lesions for certain areas was due to a vascular peculiarity in these regions. He termed the blood vessels in these areas "atonic", because they did not respond in the usual manner to vasoconstrictor substances. Skin temperature and plethysmographic methods were utilized by Huff and associates[17] to study the peripheral blood flow in patients with chronic discoid and frank systemic forms of lupus erythematosus. They observed similar abnormally slow reflex vasodilatation responses and similar photoelectric plethysmograms in patients with chronic and systemic types. More recently, Gilje and his colleagues[18] reported similar alterations of capillary morphology in chronic and systemic forms of the disease.

Goldblatt[19] studied the depression of vibratory sense appreciation, pallhypæsthæsia, in patients with all types of lupus erythematosus. The profiles were 70% of normal in chronic discoid cases and 60% of normal in systemic cases. The profiles of three patients were studied before the onset of the disease; two later developed chronic discoid lesions and the third developed subacute lupus erythematosus. The vibratory profiles were depressed below their earlier normal levels in all three patients. Profiles improved when the patients responded favourably to medications, whereas relapses produced diminution. Goldblatt felt the constancy of these findings indicated that depression of vibratory sense was due to the disease.

CLINICAL AND LABORATORY STUDIES IN THIRTY-FIVE CASES OF CHRONIC LUPUS ERYTHEMATOSUS

Material

Clinical and laboratory features were studied in 35 patients with chronic lupus erythematosus.

The features sought for were those generally accepted as occurring in recognized systemic forms of the disease. This study includes 30 patients with typical chronic discoid lesions and 5 with typical chronic disseminated lesions. Each patient had been examined by internists and by other dermatologists. They were all thought to have uncomplicated cutaneous forms of lupus erythematosus without any systemic manifestations.

Sex and age incidence.—The chronic discoid group consisted of 13 males and 17 females whose average age at onset was 34 years, with age extremes of 3 and 69 years. There were 2 men and 3 women in the chronic disseminated group; their average age at onset was 40 years, with age extremes of 23 and 56 years.

Race and occupation.—Tolman,[20] reviewing 122 chronic discoid cases, concluded that race and occupation were of little significance. Our patients were all born in the United States, 22 being second-generation Americans. Thirteen patients had the following racial backgrounds: 1 Irish, 1 Jewish, 2 German and 9 Scandinavian. An American Indian had chronic discoid lesions. There were no Negroes.

The occupations were many and varied. Included were 17 housewives, 5 farmers, 3 office workers, and one each of the following: construction worker, salesman, schoolgirl, shoemaker, sign painter, warehouseman, trucker, millwright, waiter, and fisherman.

Familial occurrence and duration.—There was no evidence of familial incidence of lupus erythematosus. The average duration of the lesions at the time of the first clinic visit was 9.9 years, with extremes of one and 30 years.

CLINICAL FINDINGS

Skin, hair and mucous membranes.—In the chronic discoid group the following were sites of initial skin lesions: right malar area in 9 cases, bridge of the nose in 8 cases, left malar area in 7 cases, forehead in 2 cases, scalp in 1 case, right ear in 1 case, left ear in 1 case, and upper lip in 1 case. Involvement of and extension to other areas on the head occurred in 27 cases. Scalp lesions with alopecia were present in 8 cases. The vermilion borders of the lips were involved in 3 cases and the nasal septum was deformed by scarring in 2 cases. Red papules were noted on the buccal mucosa of a patient who had chronic discoid lesions of both malar regions. The vaginal mucosa was not involved in any of the female patients.

In the chronic disseminated group, sites of primary involvement were as follows: right malar region in 2 cases, left malar region in 1 case, bridge of the nose in 1 case, and neck in 1 case. The lesions extended to the "V" of the neck in 3 cases, arms and dorsa of the hands in 4 cases, and the legs in 1 case. There was no involvement of the buccal, nasal or vaginal surfaces.

Pruritus.—Pruritus localized to the skin lesions was complained of by 18 patients with chronic discoid and by all 5 patients with chronic disseminated lesions.

Sunlight sensitivity.—History of exacerbations and intensification of lesions after exposure to spring and summer sunlight was obtained in 18 chronic discoid and in the 5 chronic disseminated cases. A flare-up of this nature in one of the chronic discoid cases was preceded by the ingestion of a sulfonamide. The Mayo Clinic authors[10] found light sensitivity in 22% of their earlier and in 56% of their later chronic disseminated cases.

Infections and trauma.—One patient, with chronic discoid lesions, associated the onset of her disease with a severe middle-ear infection. Three male patients believed that their initial chronic discoid lesions occurred at sites which they repeatedly traumatized during shaving.

Fever, malaise and weight loss.—Temperature, blood pressure, radial pulse rate and weight were determined at each clinic visit. When temperature was raised, investigations were made to rule out foci of infection. Ten patients in the chronic discoid and 4 patients in the chronic disseminated groups had had fever associated with the appearance of skin lesions. At the clinic 13 patients in the chronic discoid and 4 patients in the chronic disseminated groups consistently had temperatures ranging from 99° to 100° F. We were unable to relate this low-grade fever with any foci of infection. Fever was reported in 5% of the earlier Mayo Clinic series of chronic disseminated cases,[10] while "prodromal symptoms" were reported in 5% of the later series. Cornbleet and de la Huerga[21] reported that some of their chronic discoid cases had afternoon temperatures as high as 99.2° F.

Malaise with loss of energy was present in 17 patients of the chronic discoid and in 4 of the chronic disseminated groups. Ten patients with

chronic discoid lesions lost weight after the lesions appeared. Weight loss was not noted by any patients with chronic disseminated lesions.

Joint manifestations.—Migratory joint pains involving the hands, wrists, knees and elbows were described by 8 patients in the chronic discoid and by 2 patients in the chronic disseminated groups. There were fusiform swellings of the proximal interphalangeal joints in 2 patients of the chronic discoid group. Painful joints were examined radiologically in 6 patients of the chronic discoid and in 2 patients of the chronic disseminated groups. A middle-aged patient with chronic discoid lesions had osteoarthritic changes; all others had normal bone and joint structures. Arthralgia or arthritis was reported in 20% of the earlier and in 43% of the later chronic disseminated cases reviewed at the Mayo Clinic.[10]

Eyes.—Ocular manifestations of various types have been reported in subacute and acute systemic forms of lupus erythematosus.[22, 23] In our chronic discoid group, 8 patients complained of photophobia, 7 of blurred vision, and 1 of diplopia. Diplopia was the only ocular complaint in one patient who had chronic disseminated lesions. Fundi were normal in all 35 patients, but a corneal ulcer, an old iritis and a healed keratitis were found in 3 patients of the chronic discoid group.

Respiratory system.—There were no pleuritic symptoms in either chronic group at the time the histories were obtained. However, 3 patients with chronic discoid lesions had histories of repeated attacks of pleurisy, while another patient had had repeated attacks of pneumonia. Five other patients with chronic discoid lesions complained of chronic productive cough of many years' duration. Patients in the chronic disseminated group had no respiratory complaints. Physical examinations of the lung fields revealed no abnormalities in any of the 35 patients.

Radiological chest examinations were made on all patients. Examinations in the chronic discoid group revealed healed tuberculous complexes in 8 patients, increased bronchovascular markings in 4, bilateral pleural thickening in 4, minimal pleural effusion in 1, and pulmonary fibrosis in 3 patients. The 3 patients with pulmonary fibrosis had chronic cough; the remainder of the radiological abnormalities were found in asymptomatic patients. There were no radiological abnormalities in the patients with chronic disseminated lesions.

Cardiovascular system.—In the chronic discoid group, 8 patients had exertional dyspnœa and 2 complained of precordial pain precipitated by physical effort. Five patients had apical systolic murmurs. A treated luetic patient had an aortic diastolic murmur. Physical and radiological examinations revealed left-sided heart enlargement in 3 patients. Patients with chronic disseminated lesions had no cardiovascular symptoms. Persistent hypertension was found in 1 chronic disseminated case and in 5 chronic discoid cases. Tachycardia was absent in all 35 cases.

Electrocardiographic examinations were performed on 17 patients of the chronic discoid and on 3 of the chronic disseminated groups. One of the former patients had a pattern consistent with left ventricular strain; the other patterns were normal.

Raynaud's phenomenon.—This phenomenon was present in 1 chronic disseminated case and in 5 chronic discoid cases.

Gastro-intestinal system. — There were no gastro-intestinal symptoms among the patients of the chronic disseminated group. In the chronic discoid group, 5 patients complained of anorexia, 2 of nausea and vomiting, 2 of diarrhœa and 2 of obstinate constipation.

Liver and spleen.—Hepatomegaly was present in 7 patients of the chronic discoid and in 1 of the chronic disseminated group. One of the former patients also had splenomegaly.

Menses and pregnancies. — Since Cozenave's earlier observations that "this variety of lupus may accompany disorders of the uterus with menstrual troubles",[24] little has been reported of menstrual irregularities in chronic lupus erythematosus. Rose and Pillsbury[25] reported on the relationship of lupus erythematosus and ovarian function; they described premenstrual intensification of chronic discoid lesions. Further relationships of this nature have been suggested by the favourable experiences of Lamb[26] and others in the use of testosterone for the treatment of chronic discoid lesions.

A recent questionnaire review of lupus erythematosus associated with pregnancy and menopause concerned itself mainly with frank systemic forms, but some information regarding this association with chronic forms was indicated.[27] The experiences encountered in the

survey were varied. A patient with chronic disseminated lesions had a normal pregnancy, but the lesions flared up after delivery; another patient with similar lesions had a normal pregnancy with improvement of her lesions. Thirty-one patients with chronic discoid lesions were reported. Fifteen improved; 3 became worse and 13 noted no change with pregnancy. One of these patients had a spontaneous abortion.

In the chronic discoid group of our series, 4 patients had menstrual periods at irregular intervals, 1 had menorrhagia and 1 had dysmenorrhœa. In the chronic disseminated group, 1 patient complained of dysmenorrhœa. No changes were noted in the lesions of any patients either before, during or after menstrual periods. The initial chronic discoid lesions appeared during pregnancy in 2 patients. Five patients with the chronic discoid form of disease had multiple pregnancies after the appearance of the lesions; 3 noted no changes in the lesions while 2 had improvement during the pregnancies. All had a normal pregnancy, parturition and delivery of a healthy baby. A patient with chronic discoid lesions had two miscarriages, both in the first trimester; another patient with similar lesions had a spontaneous abortion. A patient with chronic disseminated lesions noted improvement during pregnancy.

We were able to observe 3 patients with chronic discoid lesions whose fertility was apparently enhanced when their lesions and general symptoms responded to quinacrine therapy. All had used contraceptive measures which prevented conception for many years. They unintentionally conceived at a period which coincided with improvement in their skin lesions and well-being. This sequence of events is reminiscent of other systemic diseases in which fertility may be restored after the disease is controlled.

Central nervous system.—Neurological abnormalities of various types have been recognized as part of the systemic picture of lupus erythematosus.[28, 29] These have included mental changes, epilepsy, peripheral neuritis and scattered shifting neurological findings. Russell and co-workers[30] felt that epilepsy, preceding or associated with the disease, was the most important and most frequent central nervous system manifestation. They were able to demonstrate abnormal electroencephalograms in some of their patients.

In our series, neurological complaints occurred only in the chronic discoid group. Six patients complained of headaches of inconstant pattern and 2 complained of vertigo. Two patients had paræsthesiæ of the arms and hands, 2 had paræsthesiæ of the legs and feet, and 7 others had paræsthesiæ of both upper and lower limbs. Two patients complained of numbness in facial areas. Superficial reflexes were normal in all 35 patients. Two patients were admitted to the psychiatric service: a man described as having a "depressive reaction" and a woman admitted with a manic depressive psychosis. Two patients seen in the psychiatric outpatient clinic had paranoid tendencies. Four others volunteered that they were constantly "nervous and jittery". A male patient experienced grand mal and petit mal seizures for seven months before the onset of chronic discoid lesions.

Electroencephalographic (EEG) studies were performed on 7 patients of the chronic discoid group; 5 patients had normal patterns. The EEG pattern of the man who experienced seizures failed to reveal evidence of focal epileptiform activity; it suggested a diffuse type of cortical damage. Another man had an EEG pattern which revealed "low-voltage fast activity in all areas and a small amount of random activity in the posterior head". This EEG pattern was thought to be a borderline one without evidence of a focal cortical lesion.

Lymph nodes.—Lymphadenopathy was found in 18 chronic cases. Involved areas, singly and in combination, were as follows: axillary in 2 discoid, cervical in 3 discoid, inguinal in 2 discoid, axillary with cervical in 1 disseminated, axillary with inguinal in 4 discoid and in 1 disseminated, axillary with cervical and inguinal in 5 discoid cases.

Associated diseases.—Patients in the chronic discoid group had the following concomitant disorders: 2 had thyrotoxicosis, 1 had hyperparathyroidism and 1 had senile cataracts. A female patient had a mid-calf amputation for tuberculous osteomyelitis. The following cutaneous disorders were also found: dermatitis herpetiformis, pachydermoperiostitis and lichen sclerosus et atrophicus.

Surgical procedures.—The effect of surgical procedures on patients with systemic lupus erythematosus was recently reviewed.[31] Nine patients in the chronic discoid group had undergone a thyroidectomy, cystocœle repair, mas-

toidectomy, parathyroid adenoma excision, appendectomies and hysterectomies without any deleterious effects upon their skin lesions or general condition.

LABORATORY FINDINGS

Numerous laboratory studies were performed on all patients. The abnormalities reported here were found on more than one occasion.

Leukopenia.—Few studies have been made of leukocyte counts in uncomplicated chronic lupus erythematosus. Reports extolling the virtues of gold therapy cautioned that this could produce a leukopenia. Some mentioned that leukopenia might even be present before the therapy, and methods were devised to raise the leukocyte count before the gold preparations were given.[32]

Weiss and associates[33] reported on repeated leukocyte counts in patients with the chronic discoid form of disease. They found that 26% of 46 patients had leukocyte counts below 6000. Tolman[20] studied the blood picture in 25 chronic discoid cases. He did not give any statistics, but reported that "the initial leukocyte count in most of the cases tended toward the lower limits of normal". The Mayo Clinic report utilized a lower normal limit of 4500 in their earlier study and 5000 in their later study;[10] 22% of their earlier and 30% of their later chronic disseminated cases had leukopenia. It would appear that although some were aware of low leukocyte counts in chronic cases, little systemic significance was attached to these findings.

The following leukocyte counts were found among our patients:

Leukocytes per c.mm.	*No. discoid cases*	*No. disseminated cases*
2000 - 3000	2	1
3000 - 4000	3	1
4000 - 5000	11	2
5000 - 6000	6	
6000 - 7000	7	
Over 7000	1	1

Differential examinations revealed lymphocytosis in 16 chronic discoid and in the 5 chronic disseminated cases. Fifteen patients whose repeated leukocyte counts were 5000 or less were subject to a variety of infections. All were able to respond with a leukocytosis with a shift to the left in the cell types.

Anæmia.—Lamb[26] indicated that anæmia may be present in the chronic discoid forms of the disease. Montgomery and McCreight[10] considered patients with an erythrocyte count under four million or with less than 12 g. Hb. % as anæmic; by these criteria 20% of earlier and 35% of later chronic disseminated cases had anæmia. When these criteria were applied to our cases, 6 chronic discoid and 3 chronic disseminated cases showed anæmia.

Platelets.—Platelet counts were performed in 16 chronic discoid cases. The results of repeated examinations were:

Platelets per c.mm.	*No. cases*
Less than 110,000	1
110,000 - 130,000	4
130,000 - 150,000	2
150,000 - 170,000	1
170,000 - 190,000	3
Over 190,000	5

Prothrombin time.—The prothrombin time was normal in 4 examined chronic discoid cases.

Bone marrow.—Bone marrow was aspirated in 1 chronic disseminated case and in 5 chronic discoid cases. In one chronic discoid case marrow was hypoplastic with neutropenia; the other marrows were normal. No L.E. cells were present in any of the marrow preparations.

Urinalysis.—Although Brocq[34] implied that the chronic localized forms were generally characterized by the absence of constitutional symptoms, he mentioned instances of this form in which "severe albuminuria" had been encountered. Evidence of renal irritation was shown by 3% of the earlier and by 39% of the later chronic disseminated cases in the Mayo Clinic studies.[10]

Repeated urine examinations were made in all our cases. Genitourinary infections were ruled out by history. These examinations were not done directly before, during or directly after menstrual periods.

The results were as follows:

No. of cases with	*Discoid*	*Disseminated*
Normal urine	14	3
Abnormal urine	16	2
Albumin	9	1
W.B.C.	15	2
R.B.C.	8	1
Casts	8	0

B.U.N.—The blood urea nitrogen concentration was normal in 15 chronic discoid and in 3 chronic disseminated cases in which it was determined.

Erythrocyte sedimentation rate. — Scattered case reports have indicated that the erythrocyte sedimentation rate may rise in uncomplicated chronic lupus erythematosus. In 1933, Tulipan and Director[35] studied erythrocyte sedimentation rates in various dermatoses. The rates in 10 cases of unspecified types of lupus erythematosus showed elevation in only one instance. Cochrane[36] utilized the sedimentation rate as a guide to prognosis and state of activity in chronic discoid lupus erythematosus. Repeated examinations were made in 83 patients; abnormally high sedimentation rates were found in 66. He felt that lower sedimentation rates were associated with skin lesions of low-grade activity and a better prognosis. The series from the Mayo Clinic[10] indicated that sedimentation rates were raised in 65% of 20 chronic disseminated cases.

In the present series, sedimentation rates were determined in 26 chronic discoid and 5 chronic disseminated cases. These determinations were not made directly before, during or just after menstrual periods, or when there was evidence of infection. Elevations reported here were present on two or more examinations.

Erythrocyte sedimentation rate (mm. in one hour—Westergren)	*Discoid cases*	*Disseminated cases*
*Normal (0 - 20)	3	
*Mild increase (21 - 40)	2	2
*Moderate increase (41 - 60)	13	2
*Rapid (61 or more)	8	1

*Mayo Clinic classification.

Serological tests for syphilis.—Biological false positive reactions for syphilis are accepted occurrences in systemic lupus erythematosus. Rein and Kostant[37] reviewed the false positive serological tests in all varieties of this disease. The sera which they subjected to a battery of tests were obtained from their clinics or practices and from centres throughout the U.S.A. In the former group of sera, false positive reactions were present in 15% of sera from patients with chronic discoid and in 18% of sera from patients with chronic disseminated lesions. In the group of sera obtained from the field study, 57% of sera from patients with chronic discoid and 75% of sera from patients with chronic disseminated lesions showed similar false positive reactions. In each patient, syphilitic infection was ruled out by history and physical examination. The Mayo Clinic group of chronic disseminated cases revealed biological false positive tests in 6% of the earlier and in 17% of the later cases.[10]

Multiple serological tests for syphilis were performed on sera from all 35 patients in this study. There were no biological false positive tests, but 2 patients still had residual positive reactions from past luetic infections.

L.E. cell phenomenon.—No general agreement has been reached regarding the incidence of this phenomenon in systemic forms of the disease, and there has been even less agreement regarding its incidence in the uncomplicated chronic forms. We have seen a fatal case and typical, severe systemic cases in which it was not possible to demonstrate this phenomenon.[38] Furthermore, this phenomenon is now being reported with increasing frequency in other conditions such as penicillin reactions and the hydralazine syndrome.[39] The L.E. cell is a helpful aid in consolidating clinical and laboratory findings in patients suspected of having systemic lupus erythematosus. Its presence without other substantiating evidence does not mean that the patient has systemic lupus erythematosus; nor does its absence, in the face of other positive evidence, obviate a diagnosis of lupus erythematosus with systemic involvement.

In 1952, Smith[40] reviewed his own experiences and the experiences of others with this phenomenon. At that time, accumulated reports indicated that the phenomenon had been sought for in 25 chronic discoid and in 5 chronic disseminated cases. There was one instance in each chronic group of weakly positive tests (one L.E. cell per 500 neutrophils). To these may be added the 2 patients with chronic localized forms in whom Gold[41] was able to demonstrate L.E. cells. More recently, Weiss and Swift[42] reported that they found L.E. cells in only 2 out of 55 cases of discoid lupus erythematosus. Cohen[43] was unable to find L.E. cells in the 9 chronic cases which he examined.

In our series, the phenomenon was sought for in blood clot preparations from 21 patients of the chronic discoid and 4 of the chronic disseminated group. There were no L.E. cells in any of the preparations, but tart cells were

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seen in preparations from 2 patients with chronic discoid lesions.

Serum protein.—Serum protein changes are considered common in systemic forms of lupus erythematosus. The reversal of the albumin-globulin ratio is often accompanied by an elevation of the gamma globulin fraction. Walker and Benditt[44] subjected sera from patients with various forms of lupus erythematosus to electrophoretic analysis. Sera from 4 patients with the chronic discoid form of disease showed significant elevations in gamma globulin concentration. Cornbleet and de la Huerga[21] found high gamma globulin levels in subacute and acute cases, but not in 8 chronic cases. Cohen[43] studied 8 chronic cases; he found increased gamma globulin levels in 2 chronic disseminated cases.

Total protein, albumin and globulin determinations were made in 27 of our chronic discoid and in the 5 chronic disseminated cases. The method used was based on differential precipitation with salts. The results are indicated below.

Serum proteins	*Discoid cases*	*Disseminated cases*
Total 6 - 8 g.%	25	4
Total more than 8 g.%	2	1
Reversed albumin-globulin ratio	15	3

Alpha, beta and gamma globulin levels were determined in 1 chronic disseminated and in 13 chronic discoid cases. None of the fractions were decreased below normal levels. The alpha fraction was increased in 1 chronic discoid case while the beta fraction was increased in the examined chronic disseminated case. An increased gamma globulin fraction was found in the chronic disseminated case and in 7 chronic discoid cases.

Liver function tests.—Studies of serum bilirubin, total lipids, cephalin-cholesterol flocculation and thymol turbidity were carried out for 18 patients with chronic discoid and for 3 with chronic disseminated lesions. Total lipid and bilirubin levels were normal in all instances. Thymol turbidity tests were positive in 1 chronic disseminated case and in 7 chronic discoid cases. Cephalin-cholesterol tests were positive in 1 chronic disseminated case and in 5 chronic discoid cases. These abnormalities were found in patients with plasma protein alterations and were therefore probably due to these protein changes rather than to hepatic damage.

Porphyrins.—Increased urinary porphyrin excretion has been reported in patients with systemic and chronic forms of lupus erythematosus.[45-47] In 14 patients with chronic discoid and 4 with chronic disseminated lesions 24-hour quantitative determinations of urinary uroporphyrin and coproporphyrin excretion showed presence of uroporphyrin in one chronic discoid case only. Urinary coproporphyrin excretion was significantly increased in 4 chronic discoid cases.

Spinal fluid.—Spinal fluid was not abnormal in the 5 chronic discoid cases examined.

Skin and muscle biopsies.—Biopsies of skin lesions from all the patients were examined. Each had histological changes compatible with the disease. Surgical biopsies of the deltoid muscle in 3 chronic discoid cases showed normal muscle histology.

COMMENT AND CONCLUSION

Concern with the problem of whether or not chronic lupus erythematosus is a systemic disease has been intensified within the last decade, when interest in lupus erythematosus spread beyond the bounds of dermatology. Few systemic investigations were made in uncomplicated chronic cases because the lesions were thought to be confined to the skin. Systemic aspects were usually considered only when there was some indication that transformation into a frank systemic form had occurred.

The clinical, laboratory and experimental observations which indicate that chronic lupus erythematosus is a systemic disease have been reviewed. Thirty-five patients with chronic lupus erythematosus were studied in a manner comparable with that used in the study of frank systemic forms of the disease. The clinical and laboratory irregularities sought for are generally considered characteristic of systemic involvement. The abnormalities encountered were similar to or identical with those found in subacute and acute lupus erythematosus, but were by no means so severe or so marked. It would appear that the presence of these abnormalities was more than coincidental, for they were found in patients thought to be healthy and free of systemic involvement.

It is concluded that these abnormalities were indications that organs and systems other than the skin are involved in chronic lupus erythematosus. They indicate that chronic, subacute and acute lupus erythematosus are in all probability variants of the same disease.

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RÉSUMÉ

On accepte généralement dans les milieux dermatologiques l'opinion de Ellis et Bundick voulant que les diverses formes de lupus érythémateux aient une étiologie commune. L'auteur a entrepris d'appliquer aux cas d'herpès crétacé et aux formes chroniques disséminées les méthodes de recherche habituellement réservées aux lupo-viscérites. Les multiples difficultés d'une telle entreprise se manifestent même au stage des différentes classifications qu'offrent les autorités en la matière (classifications nécessairement variables puisque l'agent étiologique reste encore inconnu).

Les constatations exposées dans cet article sont basées sur les observations très fouillées tant cliniques que clinicopathologiques de 13 hommes et de 17 femmes atteints de lupus érythémateux fixe, et de 2 hommes et 3 femmes montrant la forme chronique disséminée. Les résultats ont montré la présence d'anomalies semblables à celles que l'on trouve dans le lupus érythémateux exanthématique aigu ou subaigu, sans toutefois être aussi marquées. Ces anomalies doivent être considérées comme bien établies puisqu'on les trouva chez des individus que l'on croyait en bonne santé et sans aucune atteinte systémique. Il semble donc légitime de conclure que les formes chroniques n'intéressent pas seulement la peau mais aussi plusieurs autres organes. Il est tout probable que les formes aiguës et subaiguës ne soient que des variantes de la même maladie.

M.R.D.

CONSTRICTIVE PERICARDITIS

Clinical aspects of 78 cases of constrictive pericarditis were studied by Dalton and his colleagues (*Ann. Int. Med.*, 45: 445, 1956). Forty-two patients operated upon were still living. Six had been followed up for over 20 years, 10 for over 10 years, and 11 for over 5 years. All of the patients followed up over 20 years are living normal, unrestricted lives.

Operative results were classified and operative mortality was calculated for initial and later operations. The majority of patients symptom-free postoperatively show some abnormal physical signs. The clinical features in cases classified as showing excellent results, fair results and failures were compared. Several interesting features are noted.

For example, dyspnœa, ankle œdema and abdominal swelling were the most frequent complaints. Neck vein distension and hepatomegaly were the most frequent physical findings. A systolic blood pressure above 130 mm. Hg was found in only one patient preoperatively, whereas wide pulse pressures were not rare (greater than 50 mm. Hg in 9% of cases). Systolic blood pressures commonly rose postoperatively, but no patient became seriously hypertensive. Cardiac enlargement was present in one-half the cases. Cardiac pulsations were diminished in four-fifths of the cases but were fluoroscopically normal in the other fifth. Abnormal electrocardiograms were present in every case. T waves were abnormal in 100% of the cases. P waves were abnormal in 72% of those cases with normal rhythm. Atrial arrhythmias were common, (34 of the 78 cases); fibrillation was identified in 27, being constant in 19, while flutter occurred in three, changing in two to fibrillation. Calcification was noted in the pericardium in 60% of the cases. The characteristic cardiac catheter findings are reviewed.

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THE STATUS OF THE ANTIBIOTIC DISC IN CANADA*

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THE TESTING of organisms for sensitivity to antibiotics has always presented a problem to the clinical test laboratory. This problem has increased with the introduction of every new antibiotic. The most accurate method of performing this task is by controlled tube dilution tests which unfortunately are time-consuming and can only be used routinely in some specialized hospital laboratories.

The use of the dry antibiotic disc seemed a logical solution. It was introduced as a simple and accurate means of screening and has received wide acceptance in hospital laboratories. An impressive number of articles have appeared in the literature attesting to its value. In spite of these glowing testimonials, discrepant results have been obtained in a number of laboratories, and some of these were brought to our attention. In some instances, the results with the disc were at variance with results from other sensitivity tests and, further, there seemed to be a disproportionately large number of disagreements between the laboratory tests and the clinical response. The most frequent complaint was the anomalous finding that discs with a high labelled potency showed less activity than those of a lower labelled potency against the same organism. Lack of confidence has resulted; some hospital laboratories have given up the use of the commercial disc, and have either prepared their own or used other sensitivity testing techniques. To study the problem it was decided to carry out a survey of antibiotic discs on the Canadian market. It was first necessary to manufacture control or reference discs of our own, and to develop techniques for the extraction of the antibiotic from discs so that they could be properly assayed. Market samples were then obtained and assayed. The procedures used and assay results were as follows.

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PROCEDURE

(a) *Manufacture of discs.*—Schleicher and Schuell* filter paper No. 748 was used. Discs, 5 mm. in diameter, were stamped out with a paper punch and spread in large sterile petri dishes, 15 cm. in diameter—approximately 325 discs to a plate. Stock solutions were prepared by carefully weighing antibiotic preparations of known potency and dissolving them in sterile distilled water so as to contain 1000 micrograms (or units) of antibiotic per ml. These were then divided into lots of 2 to 10 ml. and kept frozen until used. Working solutions were prepared by melting them at room temperature and diluting the stock in sterile distilled water so that the amount required for each disc was contained in 0.02 ml.—the fluid capacity of the disc. This amount was delivered to the disc by means of a graduated 0.1 ml. pipette. The discs were then dried at 52° C. for 2 hours in an incubator oven, following which they were stored in screw-capped vials without desiccant in the refrigerator at 4° C.

(b) *Extraction techniques and assay methods.*—Using a VirTis† homogenizer, a suitable number of discs (the number will vary with the antibiotic and the working level) are placed in a 5 ml. microflask, and suspended in 5 ml. of the buffer normally used for the assay of the antibiotic concerned. The discs are completely macerated by the homogenizer within 30 seconds to 1 minute and the mass is filtered through No. 1 Whatman filter paper. The filtrate is then assayed in accordance with the official cylinder-plate methods in use at the Laboratory of Hygiene, which are very similar to the cylinder-plate methods outlined by Grove and Randall.[1]

RESULTS

Assays were carried out on discs prepared by five manufacturers. Some were obtained on the open market, and others were received directly from the manufacturer. The results of assays are shown in Table I, where both the labelled and assayed potencies are given for each lot. Many of the results are an average of two or more tests, and others were single assays. The products from Manufacturers A, B, C, D and the "control" lots were the paper type disc, whereas those from Manufacturer E were of the tablet type. The assayed potencies of the "control" and "tablet" discs agreed fairly well with the labelled claims. This was not always the case for the commercial paper discs, where the assayed potency varied anywhere from 2% to more than 300% of the labelled potency. Control discs were prepared with five of the antibiotics and in each case we were able to recover the amount of antibiotic put in. Time has prevented us from preparing control discs for the other antibiotics, but the five types already made were satisfactory. There is no reason to suspect that the others could not be made equally well. The results of assays for 92 lots of commercial discs are shown in the

*Manufactured by Carl Schleicher & Schuell Co., Keene, N.H.

†E. Machlett & Son, New York.

TABLE I.—RESULTS OF ASSAY

	Potencies*											
	Mfr. A.		Mfr. B		Mfr. C		Mfr. D		Mfr. E		Control discs	
Antibiotics	(L)	A	(L)	A	(L)	A	(L)	A	(L)	A	(L)	A
Aureomycin	(10)	3.5	(5)	2.3	(10)	6.3	(5)	1.7	(2)	1.9	(5)	6.3
	(50)	22.5	(10)	6.6	(50)	22.1	(30)	13.7	(20)	18.8	(10)	8.9
			(30)	17.0							(30)	30.6
Bacitracin	(20u)	8.6	(2u)	0.26			(2u)	1.7	(2u)	2.0	(2u)	1.9
	(50u)	2.7	(10u)	3.1			(10u)	11.0	(20u)	21.8	(10u)	10.8
			(20u)	8.0							(20u)	18.0
Chloram-	(10)	8.7	(10)	5.0	(10)	10.0	(5)	5.2	(20)	29.4		
phenicol	(50)	34.0	(30)	8.0	(60)	33.8	(30)	41.3				
	(50)	73.0										
Dihydro-			(2)	4.5			(10)	10.2				
streptomycin			(10)	7.5			(50)	51.0				
			(100)	19.0								
Erythromycin	(10)	4.4	(2)	0.9	(1)	4.1	(2)	2.0	(10)	12.2		
	(50)	30.0	(5)	2.4	(10)	4.4	(15)	16.7	(100)	100.0		
			(15)	7.1								
Neomycin	(50)	17.0	(5)	1.2			(5)	2.1			(5)	4.2
			(10)	2.2			(30)	13.5			(10)	10.0
			(30)	5.2							(30)	28.0
Penicillin	(1.5u)	0.4	(2u)	1.3	(1.5u)	5.2	(2u)	0.47	(1u)	0.95	(0.5)	(0.6)
	(1.5u)	0.7	(5u)	2.8	(10u)	26.7	(10u)	0.62	(10)	8.4	(1.0)	1.0
	(5u)	3.1	(5u)	5.6							(10u)	11.0
	(10u)	8.0	(10u)	10.0								
	(10u)	4.6	(10u)	0.17								
Polymyxin	(10u)	0.99	(5)	5.0			(5)	24.0				
	(25u)	6.0	(10)	3.0			(30)	44.0				
			(30)	1.5								
Streptomycin	(10)	13.9	(2)	3.1	(10)	38.9			(10)	10.0	(2)	2.5
	(25)	26.0	(10)	3.6	(100)	116.0			(100)	93.0	(10)	9.1
	(100)	150.0	(100)	66.0							(100)	111.0
Terramycin	(10)	5.5	(5)	0.95	(10)	6.9	(5)	4.2	(10)	11.8		
	(50)	25.5	(10)	2.0	(60)	28.7	(30)	32.6	(100)	132.0		
	(50)	7.2	(30)	13.0								
Tetracycline	(10)	2.8	(5)	2.1	(10)	8.5	(5)	3.2	(10)	10.0		
	(50)	3.7	(10)	7.0	(50)	23.2	(30)	27.0	(100)	104.0		

* = Expressed in micrograms except where otherwise designated. (L) = Labelled potency.
u = units. A = Assayed potency.

table. Sixty-one were found to have less than the labelled potency, and nine had more than the labelled potency, whereas 22 lots (12 from one manufacturer) met the labelled claims.

The majority of Manufacturer A's discs averaged between 30 and 40% of the labelled claims, but this varied with the different antibiotics. The bacitracin discs labelled 50 units had 2.7 units—less than one-third the amount found in the discs labelled 20 units but which had 8.6. The best correlation between the labelled and assayed potencies was with the streptomycin discs for this manufacturer.

The discs from Manufacturer B were equally variable. One-half of the penicillin discs were satisfactory; the other half were considerably under potency. This manufacturer and Manufacturer D label their polymyxin discs in terms of micrograms, even though the unit is the official designation for potency for this antibiotic in all countries, and in spite of the fact that the activity of one microgram will vary with each lot produced. It is interesting to note that while the polymyxin disc labelled 5 μg. was up to potency, those labelled 10 and 30 μg. were found to have 3.0 and 1.5, respectivly—the higher the labelled claim, the lower the amount of antibiotic.

The discs from Manufacturer C varied even more than that noted above. Some were considerably under potency, i.e., the aureomycin, terramycin (oxytetracycline) and tetracycline, but others such as penicillin and streptomycin were considerably over the labelled potency. For erythromycin, the 1.0 μg. disc was found to have 4.1 μg. and the disc labelled 10 μg. had almost the same potency—4.4 μg.

Manufacturer D's products assayed somewhat better than those of the preceding three.

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The assays of discs for bacitracin, chloramphenicol, dihydrostreptomycin, erythromycin, terramycin and tetracycline agreed well with the labelled claims. On the other hand, the assayed potencies for the aureomycin, neomycin and penicillin discs were found to be considerably under the declared potency, and that of the polymyxin, given in μg., was much over potency. The 5 μg. discs had 24 μg., four times the labelled potency, whereas the 30 μg. discs had 44.

DISCUSSION

The manufacture of antibiotic discs and their successful use involve a number of considerations—the quality of antibiotic, the composition of the discs (paper, tablet or other construction), test performance, etc. This paper deals with only one of them—the potency of the final product at the time of use. This factor is of prime importance if reliable results are to be obtained in the laboratory. Furthermore, if the potency of the disc is controlled accurately, the other problems associated with their manufacture will be more readily identified and overcome.

The picture presented in Table I is rather dark. The results with the commercially produced paper discs were particularly disturbing. In some instances, there seemed to be little or no connection between the assay results and labelled claims. In one series of tests (not reported in the table) one lot of penicillin discs labelled 10 units was found to have only a trace of antibiotic, whereas another manufactured by a different company labelled to have the same potency had over 30 units. It is obvious that no laboratory can be assured of accurate results with test products that vary to this degree.

These results were brought to the attention of the individual manufacturer, and a request was made for details of their control test procedures. Replies were received from all five, but data from two were not complete. It appeared, however, that none of the manufacturers used potency tests which could be considered adequate. Three manufacturers assayed and controlled potencies by use of so-called "representative" strains—comparing the intact disc against fluid house standards in cylinders, a useful procedure for qualitative control but one which has little value for quantitative assays. The other two manufacturers used extraction techniques, but apparently neglected to assay against standard antibiotics of known potency, which strictly limits the value of such a procedure. All of the manufacturers relied heavily on their suppliers for the quality of their bulk antibiotic, and all placed complete reliance on the results of assays (on the bulk) as provided by the supplier. This reliance was for the most part justified, particularly since the majority of antibiotics are certified by the U.S. Food and Drug Administration, but it still does not relieve the disc manufacturer of carrying out his own control tests. In one instance at least, penicillin was provided which by our tests was found to contain penicillin K and large amounts of degradation products.

One might well wonder why test products varying to the degree noted in Table I are still being used. It is true that a number of laboratories have found the disc technique too inaccurate for their purpose and no longer use it, but the simplicity of the method is such that most laboratories are unwilling to give it up, particularly since discrepancies may not be too easily discernible. For unless grossly faulty discs are being used, they may still give useful results and may serve to differentiate between highly sensitive and very resistant strains. A careful study of the results in the table will show that because of this feature the majority of the discs assayed would probably yield satisfactory tests in spite of their off potencies. Discrepant results, when they have occurred, have usually been attributed to failings of the technique. In our experience, results with properly made discs parallel those of properly controlled tube dilution tests. It is obvious that a great number of studies on disc performance will have to be reviewed, since the observations made might well have been based on faulty discs.

At the time this survey was carried out, the "tablet" disc seemed to be the only type providing a reliable test agent. It is used in the laboratory in the same way as the paper disc and yields similar results. Since this survey was carried out, tablet discs identified only by their antibiotic constituent and unlabelled for potency, prepared by another manufacturer, have been tested. The penicillin discs were found to contain 22 units per tablet, and the bacitracin 456 units. The content of antibiotic of the others given in μg. per tablet was as follows: aureomycin 648, chloramphenicol 1624, erythromycin

485, neomycin 820, streptomycin 1168, terramycin 692, and tetracycline 1080 μg. The antibiotics in these discs obviously greatly exceed levels which have practical use. The laboratory worker should avoid the use of discs that do not have a declaration of potency on the label in terms of μg. or units. Terms such as low, medium, and high potency are not satisfactory.

The manufacturer of the paper disc still has to demonstrate that he can make a reliable product. At least two manufacturers are taking steps in this direction. Our own work shows clearly that it is possible to manufacture a paper disc with controlled known potency and one which will keep its potency when stored at refrigerator temperature. The results listed for the "control" discs in Table I were on lots stored in the refrigerator for periods of from two to five months; during this period there was no detectable loss in potency. On the other hand, at room temperature, the potency of penicillin discs dropped fairly rapidly, between 30 and 40% in three weeks. The other antibiotic control discs did not lose potency under the same conditions. Each antibiotic, however, will have to be studied separately.

The majority of our stability studies to date have been limited to penicillin discs, since in our experience they have been the most unstable. In the manufacture of the control discs, the antibiotics were dissolved in distilled water. Since the penicillin discs prepared in this manner lost potency when stored at room temperature, attempts were made to find a stabilizing substance. It was soon found that certain phosphate buffers hastened the loss of potency. This loss was detectable in five to six days at room temperature, and in two to three weeks at refrigerator temperature. The use of desiccant did not substantially slow down this deterioration. The use of sodium citrate, however, in a concentration of 1% in the final diluent has thus far proven satisfactory and may be all that is necessary to stabilize the potency of penicillin discs. These studies are continuing.

The method of manufacturing discs outlined in this report, while satisfactory for individual laboratories, may not lend itself to commercial use. It should be emphasized again that the responsibility for the final product rests entirely on the disc manufacturer, who will have to carry out all of the necessary tests to ensure not only that his discs are up to potency, but that the potency will be maintained throughout its period of recommended use. It should be pointed out that the assay method described does not demonstrate differences in potencies between individual discs within a lot. The manufacturer will have to test a reasonable number of discs for individual performance to ensure that each disc has the same amount of antibiotic.

In our dealings with the manufacturers, only two expressed concern over the quality of their product. The apparent lack of concern by the other three may have been due to the small volume of sales of their products in Canada. All paper disc manufacturers stressed the importance of the performance of their product on the plate, and looked upon the actual potency in the disc as a secondary consideration. The performance of the disc is, of course, the final criterion of their value and there is every reason to believe that their performance on the plate will be improved by their containing the proper amount of antibiotic.

It is the intention of the Department of National Health and Welfare to ensure that antibiotic discs offered for sale in Canada meet proper specifications. In the Canadian Food and Drugs Act, antibiotic discs come under the definition of a "device". As such, they are subject to control under Subsection (1), Section 19, Part I of this Act, which reads as follows:

> 19. (1) No person shall label, package, treat, process, sell or advertise any device in a manner that is false, misleading or deceptive or is likely to create an erroneous impression regarding its character, value, composition, merit or safety.

The manufacturers or distributors of antibiotic discs will have to show that, within the limits of error of the assay concerned, their discs contain the precise amount of antibiotic throughout the entire period recommended for its use.

SUMMARY

1. A survey of antibiotic discs sold in Canada showed that the potencies of the majority tested were not in accordance with their labelled claims.

2. Ninety-two lots of commercial paper type discs were tested. Sixty-one lots were found to have less antibiotic than the labelled potencies, nine had more than the labelled potency and 22 lots met the labelled claims.

3. Tablet-type discs from two manufacturers were tested. The results of assays on the

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products from one manufacturer agreed well with the labelled claims. The products from the other manufacturer, which were unlabelled for potency, were found to have excessively large amounts of antibiotic.

4. Laboratory workers should avoid the use of discs whose potencies are not labelled specifically in terms of micrograms or units.

5. The results and observations of antibiotic studies involving the use of the disc might well be reviewed since there is a strong possibility of faulty discs having been used.

6. Steps are being taken under the Food and Drugs Act of Canada to ensure that only properly manufactured discs are distributed in Canada.

7. The manufacturers of antibiotic discs will be required to show that, within the limits of error of the assay concerned, their discs contain the precise amount of antibiotic as labelled throughout the period recommended for its use.

REFERENCE

1. GROVE, D. C. AND RANDALL, W. A.: Assay methods of antibiotics. A laboratory manual. Medical Encyclopedia, Inc., New York, 1955.

RÉSUMÉ

Une enquête menée récemment a montré que la teneur en antibiotiques de la plupart des disques employés en bactériologie pour les antibiogrammes ne correspondait pas aux assertions des manufacturiers telles qu'exposées sur les modes d'emploi. Quatre-vingt-douze lots de disques en papier furent soumis à l'épreuve; 61 d'entre eux avaient une teneur inférieure à celle indiquée sur le contenant alors que, pour 9 autres, elle était supérieure. Vingt-deux lots seulement répondaient précisément aux prétentions du manufacturier. En ce qui concerne les rondelles en forme de comprimés, les produits d'une maison s'avérèrent en conformité avec la teneur indiquée alors que les produits d'un autre manufacturier bien que vendus sans indications précises contenaient une concentration excessive d'antibiotes. Les auteurs recommandent au personnel de laboratoire de ne pas employer des produits dont la concentration en microgrammes ou en unités n'est pas clairement indiquée. Tous les travaux publiés jusqu'à présent, basés sur l'emploi de ces disques devraient être soumis à une réévaluation à la lumière de ces données. Des mesures sont en train d'être prises sous l'autorité de la Loi sur les aliments et drogues du Canada pour voir à ce que seuls les disques correctement fabriqués soient distribués au Canada. Ces mesures obligeront les manufacturiers à respecter dans leurs produits la concentration indiquée sur l'étiquette, dans les limites d'erreur permises par les méthodes d'évaluation et jusqu'à expiration de la période recommandée pour leur emploi. M.R.D.

THE WIDER VIEW

POSSIBILITIES IN THE CANADIAN PATTERN OF DISEASE

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"There are those who think that such diseases as kala-azar, sleeping sickness, Oriental fluke infections and many other local or 'tropical' diseases are of no vital importance except to inhabitants of the countries directly influenced or to travelers through these countries. That the importance of such parasitic diseases is far greater than this is obvious from the fact that, with modern facilities for communication and with the extent of foreign immigration at the present time, there is no part of the world so remote that the things which affect it may not also affect any other part of the world if conditions are suitable." —ASA CHANDLER

APPRECIATION THAT THE geographical pattern of disease has more than an academic interest is endorsed by the increasing attention paid to it. It was recently pointed out to a meeting of geographers that the double pattern of disease so long observed, that of the western highly developed countries with its emphasis on stress, mental illness and geriatric disorders, and that of the so-called backward areas where infection, malnutrition and parasitic diseases predominate, may in the future be modified to a single global pattern with the "struggle of vast populations for limited primary resources such as food and pure water supplies as the key-note".[1]

The American Geographical Society has taken the lead in promoting the study of medical geography and has laid the foundations of a more widespread understanding of disease patterns and their correlation with the different geographical areas of the world. Canada, by virtue of its terrain and fauna, population and climate, occupies a position in the temperate zone midway between the highly developed and populated countries such as Germany and Britain and the as yet undeveloped tundra and desert-mountain-lake areas existing in North East Asia. The population of Canada is small today in comparison with its over-all size, and the pattern of its disease in the populated areas mirrors that of its great neighbour, the northern section of the United States of America, mainly because, up to now, the racial groups of its population have derived predominantly from the same sources, such as western and southern

Europe. But in the coming years, this supply will fall away. There is already evidence of this in the current reports from the Department of Immigration which note a recent fall in immigration; this, it claims, is due to the increasing prosperity of such countries as Britain, Germany and Holland whence have come the majority of immigrants. If, in the future, to acquire the increased population necessary for development of the country, peoples from other areas of the world such as the Near and Far East and the West Indies are admitted, then the pattern of our disease may well change. There are many reasons why this could happen in Canada, with its subtropical summer climate, potential intermediate insect and other hosts, and a fauna already known to harbour many diseases related to those occurring in the abovementioned areas.

Through the work of the World Health Organization and the increasing ease, speed and volume of traffic from one continent to another, medical and lay men are becoming more familiar with each other's health problems and their significance in the social and economic life of nations. Most people take for granted that the so-called backward areas are not at present economically pulling their weight in our Western way of life; one has to look but a short distance to the hinterland of British Guiana to find the raw product on which the great development at Kitimat in British Columbia depends for its conception and continued operation.

If I were asked to name a major factor governing the health of the peoples of the temperate and tropical zones, I should rate nutrition as of primary importance. We on this continent would regard the problem of nutrition applied to these mostly tropical areas as one of undernutrition and would, in the main, be right, probably failing to appreciate that at the same time we have our own and perhaps just as serious a problem, that of overnutrition, a growing menace and rapidly becoming a number one killer.

The pattern of disease varies both in a racial and geographical manner. Native peoples show many differences in their response to disease as it occurs in the non-indigenous patient: this not only applies to people in tropical climates but may be seen in our own Eskimos and Indians. Too often in the past have whole communities of these folk been decimated by our "usual

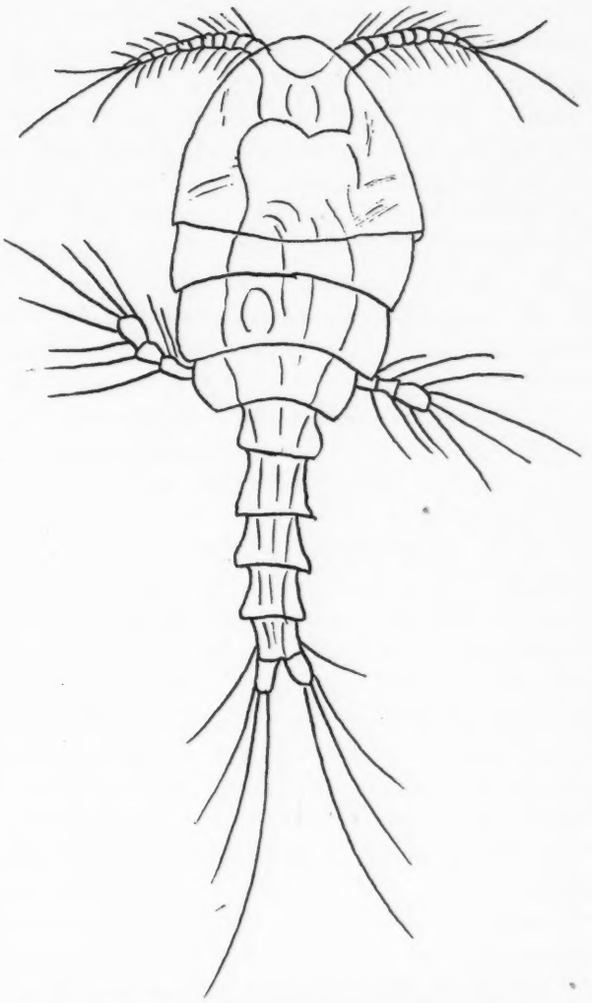

Fig. 1.—Cyclops, a minute crustacean which is the intermediate host for *Diphyllobothrium latum*, the fish tape-worm and *Dracunculus medinensis*, the guinea worm.

childish diseases", chickenpox and measles. In countries like India, with which I am familiar, it is not always easy to differentiate varicella from variola, and acute hæmorrhagic measles is relatively common. Mumps and varicella in children and adults are not infrequently accompanied or followed by nervous system complications ranging from isolated cranial nerve palsies to severe encephalitis. The converse situation, however, also occurs and this time operates to the detriment of the more highly developed peoples. Poliomyelitis is endemic in many parts of the world, as is seen by any observant traveller to these areas: the majority of the deformed beggars are victims of this disease, almost without exception having been attacked in infancy. The general population has a high degree of immunity bought at a fairly heavy cost in infants' lives. Figures have recently been given[2] showing the presence of acquired antibodies to

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all three types of poliomyelitis virus in up to 80% of an African population by the time children have reached five years of age, and they confirm that active infection is probably occurring only in young children. I do not recall having an adult indigenous case amongst my patients in South India. The opposite picture is, however, seen in more advanced communities with a higher standard of living, the epidemics of the last 20 years speaking for themselves. Some of the lesser known but well-studied attacks, such as that amongst service personnel in the Azores in the latter part of the War and amongst the non-immune indigenous population of St. Helena Island just after the War, are worth recalling.[3]

We do not consider Canada to be epidemiologically important with regard to the more fanciful, parasitic, tropical diseases, but it may be worth while to pause and reflect on the nature of some of these conditions, particularly from the climatic and intermediate host point of view. First of all, we do not need reminding that we are geographically continuous with the United States, which still has within its borders many of the most bizarre diseases. Secondly, our summer climate in the thin strip across the continent that contains 80% of our population is subtropical and ideal for the spread of epidemic disease of all kinds. Thirdly, we harbour many related species of the common arthropods, crustacea and molluscs which are the intermediate hosts of many tropical diseases.

Infection with a variety of blood flukes, the schistosomes, causes untold misery in certain parts of the world, particularly the continent of Africa, the West Indies, and China. Many of our Canadian lakes harbour the small snails which are the intermediate hosts of these parasites, and schistosomiasis does indeed occur. So far only the avian variety has been found in Canada, though mammalian forms are found in the United States.[4] These avian forms only cause the true infection in birds, mostly ducks and geese, but the developing cercaria, which are the larvæ liberated from the snail at one phase of the schistosome's development, will enter the skin of man and possibly other animals and give rise to a considerable irritation, the cercarial dermatitis, a skin condition which we in this country share with our friends in Africa, Malaya, China and the Caribbean Islands. Schistosomes are not so restricted in their range of mollusc hosts as was previously thought. It is perhaps sobering to realize that the lakes of Canada harbour at least three of the snails known to be the intermediate hosts of human schistosomiasis, namely *Planorbis, Lymnæa* and *Physopsis.* The conditions for disseminating human infection do not necessarily exist, but this situation might alter.

To take an example: schistosomiasis, up until very recently, was not known to exist in India. The health authorities there, however, were always conscious that an endemic focus might be introduced, particularly during the late war when three divisions of African troops passed through India. There was no evidence at that time of indigenous people contracting the disease, but recently a focus has been found near Bombay.[5] Canada has opened its doors to citizens of many countries, including China and the West Indies, natives of which may harbour *S. japonicum* and *S. mansoni* respectively, and dissemination of the infection is a possibility, though at present remote. We should, however, consider the schistosome in the differential diagnosis of illness in immigrants from countries with the endemic disease.[6]

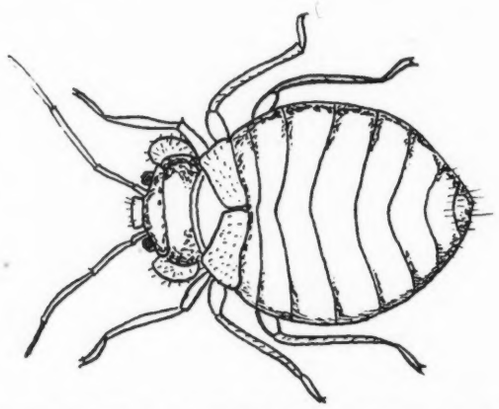

Fig. 2.—Cimex, the bed-bug, a possible vector of *Trypanosoma cruzi, Leishmania* and *Pasteurella tularensis.*

It is therefore pertinent to our consideration of geographical medicine that we remember that every summer so-called tropical, albeit animal, disease is being introduced to our country by migrating birds, and that increasing traffic is taking place between Canada and countries with bizarre endemic diseases. There is no doubt that the more this vast country becomes populated, the greater chance there will be for human disease to occur due to agents hitherto unsuspected. Recent examples, such as mycotic diseases and infections with comparatively unknown organisms, *Listeria monocytogenes* and *Toxoplasma gondii,* to name but two, are enough to keep us from being complacent.

The control of water-borne disease is a problem in any primitive country which is being settled and developed by a non-indigenous people. The classical forms of water-borne dis-

ease, such as the dysenteries and infections due to salmonella organisms, are almost always associated with food and insect-borne means of infection and do not commonly present a problem in this country, although many of the conditions necessary for the development of an epidemic are present at certain times of the year, such as high temperatures, carriers among the population, insect vectors, inadequate water and sanitation in rapidly developing areas, and the ever-recurring problem of floods and the breakdown of water supplies and sanitation. A feature of dysentery and other intestinal infections in man is the fact that the quantity of organisms ingested is what decides whether clinical disease will occur, always bearing in mind that the degree of immunity already possessed is of almost equal importance.

Bacillary dysentery is no longer the scourge that it was in the past: the use of sulfonamides has virtually a specific effect and organisms do not become resistant. The great value of these drugs, in addition to curing bacillary dysentery, is to prevent the bowel becoming a suitable breeding ground for *Entamœba histolytica* An already diseased bowel is just what the wandering amœbic cyst likes, and where he makes his home and develops into the active trophozoite.

A common misapprehension persists amongst otherwise well-educated folk that, when travelling in remote areas, it is a safe procedure to drink aerated water. I believe this to be of some importance as a cause of chronic bowel infection in people who leave Canada on vacation for distant parts: only last spring, I treated a woman recently returned from a trip to Mexico for which she and her husband had saved for years. Three days after arriving in the country she became ill with entero-colitis and spent the next six weeks dragging herself around Mexico, still believing that if she drank the bottled water she was drinking "pure" water. The problem was to exclude amœbic or other protozoal intestinal infection, which was fortunately done, but it was many months before her bowel regained its normal function.

Protozoal intestinal infection is widespread in many parts of the world but seldom causes morbidity amongst the indigenous population, although similar infections can become a hazard to visitors and other temporary residents. In this country there is no doubt that a considerable proportion of the population harbours intestinal protozoa, and figures for amœbic carriers for this continent vary between 10 and 20% of the population.[7] This is the most important of all intestinal protozoa, but there are others which can cause prolonged illness and discomfort, amongst which *Giardia lamblia* is most frequently cited. It has been argued for many years whether *Giardia* is the cause or the effect or merely an accessory of the colitis. If this organism should be found during an investigation, it should always be treated, which is simply done with mepacrine; in many cases, the symptoms will then abate. I know of one patient who apparently developed this infection without ever leaving Canada and no doubt there are many others unreported.[8] Examination of the stools is not frequently undertaken outside of hospitals but, in view of the frequency of entero-colitis of a mild nature, there is no doubt that more frequent examination would reveal some interesting information.

The diagnosis of typhoid and paratyphoid infections is always an interesting problem, not least being the interpretation of the agglutination reactions. Before these are done it should always be known, if possible, whether the patient has ever been inoculated with anti-typhoid vaccine or suffered a clinical attack: if so, he will carry with him for many years a small antibody titre of the specific antigens. If he develops a salmonella infection—which is, of course, rare—this titre will rise but may be of little significance, as this may also happen in a number of other infections. This is known as the anamnestic reaction, and false interpretation can lead to erroneous diagnosis. If, on the other hand, the patient has never either been vaccinated or suffered from a clinical attack, then the significance of the specific test is very much greater. Without this knowledge, therefore, it is always a very wise plan to obtain blood for culture and urine and fæces, as these latter may contain the organism long after it has ceased to be blood-borne.

Infections with rickettsia comprise a sizable portion of specific infectious disease. The non-specific Weil-Felix reaction carried out by agglutinating certain species of *Proteus vulgaris* (OX 19, OX 2 and OXK) with infected sera has been invaluable in diagnosis, though suffering the disadvantage of non-specificity and false reactions. The late war in the Far East has alerted all those nations who took part to the dangers of rickettsial infections disseminated by other vectors than the louse, particularly the ticks and mites.

On this continent, Rocky Mountain spotted fever has been shown to occur as far east as the Allegheny Mountains and is transmitted by a wood tick in the western

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part of the continent, and by a dog tick in the eastern United States. The vector in the west, the wood tick *Dermacentor andersoni,* is an interesting arthropod, in that besides being the vector for this rickettsial disease, it is also known to transmit tularæmia and is the cause of the so-called tick paralysis. This is an acute ascending paralysis of the Landry type which is, however, reversible if the tick is removed promptly, and therefore it should always be searched for. Cases have also been described in other parts of the world and associated with different species of tick. In the future, as new areas of the country become opened up, the possibility of tick-transmitted rodent disease to man should be kept in mind. The list of diseases transmitted by these arachnids is imposing and they are amongst the most important vectors of disease.

Visceral leishmaniasis shares with multiple myeloma and one or two other conditions the distinction of causing a hyperproteinæmia, which is entirely due to an increase in the globulins. This fact has been utilized in exhibiting stilbamidine and similar drugs to cases of myelomatosis on an empirical basis but occasionally with temporary relief of symptoms. It is not generally appreciated that the three types of *Leishmania* (*donovani, tropica* and *braziliensis*) are morphologically related to the trypanosomes, having a flagellate form, which however only develops in the gut of the sandfly (*Phlebotomus*). Leishmaniasis, both cutaneous and systemic, should always be included in the differential diagnosis of obscure fever with hepato-splenomegaly in immigrant children recently arrived from the central and eastern Mediterranean countries. With regard to trypanosomiasis, it is well to remember that a form of this disease occurs on the South American continent and is transmitted by reduviid bugs, bed bugs, mites and ticks, with both acute and chronic forms, the former involving glands, liver, spleen and central nervous system, the latter chronic endocrine glandular deficiency. The chance of importing insect vectors into this country is remote but possible; such vectors have been found in the United States but as yet no human cases have been reported. Trypanosomiasis, due to different organisms, is distributed throughout the animal kingdom, in particular horses, cattle and rats, and is not limited to tropical areas.

One of the many interesting helminthic infestations is that with *Dracunculus medinensis* (the guinea-worm); though occurring in man only in tropical zones in both hemispheres, a very similar parasite is found in certain North American animals, notably the fox and racoon. So far, no human cases have been reported

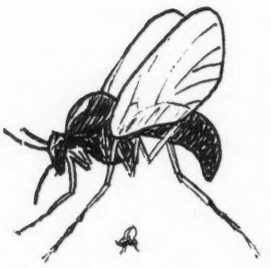

Fig. 3.—Simuliidæ, the Black Fly, the vector of certain filarial worm infections.

although dogs may become infected. Human infection elsewhere follows the drinking of water in which the minute crustacean, *Cyclops,* which contains the larvæ, occurs in any quantity.

The larvæ have entered *Cyclops* after being extruded from a break in the skin of an infected animal. Penetration of the human stomach wall follows and the larva burrows into the connective tissues, finally developing into the adult worm which finds it way into the dermis, the head breaking the surface of the skin in the neighbourhood of the knee and ankle and usually giving rise to an infected blister from irritation and secondary infection. The worm may often be palpated for some distance under the skin, and the age-old method of slow withdrawal by daily winding a little more of the worm on to a match-stick is still the most effective method of removing the worm *in toto.* Cyclops is, of course, also the vector for the fish tape-worm, *Dibothriocephalus latus.*

Up till now the biggest problem in tropical zones has not been mentioned. One cannot discuss the many aspects of malaria in a few words; suffice it to say that it still remains the biggest killer in the world today. It should be remembered that it is a disease of subtropical as well as tropical climates. The mosquito vectors are distributed throughout the world in both temperate and tropical zones; it is a disease which can give rise to immunity but at the cost of considerable mortality. At one time it was endemic in both Upper and Lower Canada[9] and could become so again, requiring only human cases to be imported into an area where the mosquito vector is present. Many Canadians both in the late Sicilian and Italian campaigns and in Korea developed this disease, and there are, thus, throughout the country many physicians who are familiar with its protean character. Although, as described in the textbooks, it has a characteristic onset and course, this is by no means always the case and any physician who has had experience always considers the possibility of malarial infection in atypical disease occurring in a person in an endemic country or one recently come from such an area.

Fig. 4.—Planorbis, the mollusc host of *Schistosoma mansoni*, the schistosome infection of the West Indies.

An interesting historical fact[10] is that when Colonel Bye's troops were building the Trent Canal in 1830, the morbidity for his regiment of engineers for that year gave the three main causes of death as: (1) corporal punishment; (2) yellow fever; and (3) malaria. These troops had recently come to the Ottawa Valley from the West Indies and probably re-introduced malaria into that area, the anopheline insect vectors being already indigenous. Yellow fever, carried by the *Ædes ægypti* mosquito, which is not a permanent resident, did not apparently cause the dreadful havoc it had done in the previous century.[11]

Demonstration of the malaria parasite is not always easy, particularly in those patients who have long suffered from the disease, and various manœuvres may have to be carried out before the diagnosis can be confirmed. In any case, the finding of malarial parasites does not necessarily indicate that malaria is the immediate cause of the illness, and some other condition, such as pneumonia, should always be looked for. It is always worth remembering that in anyone who has lived in a malarial endemic area and who has an anæmia, normochromic normocytic, it may be useful to give a course of antimalarial therapy and observe a reticulocyte response without the use of accompanying hæmatinics. Many of our New Canadians hail from these malaria endemic countries, in particular Southern Italians, Macedonians, Jugo-Slavs and West Indians, and it behoves us to exclude this disease if these people have not been longer than three years in this country.

In treating malaria attention has to be paid to the general epidemiological situation in the particular area. Acquired immunity is of considerable importance in the over-all control of infection: it seemingly develops in a similar manner to bacterial immunity, involving complement-fixing antibodies and phagocytosis. The clinical response to infection is modified, *provided the infecting parasite is of the same strain.* In dealing with clinical attacks in indigenous patients in a hyperendemic area, the object of treatment is to confine the clinical attack without eradicating the infection, as there is a danger of interfering with the acquired immunity and increasing the severity of subsequent attacks. On the other hand, if the patient is only a temporary resident without any immunity, the object is to completely eradicate the infection permanently. To this end, therefore, in addition to a schizonticide drug, such as quinine, chloroquine or Daraprim, a drug which will also eradicate the extra-erythrocytic parasites, which are mostly in the liver, is added, such as primaquine or pamaquine. This latter course of treatment is naturally the one that should be carried out in any patient suffering from malaria in this country, for if such patients are not completely cured, they become a hazard as potential sources of infection. Natural immunity also occurs but is apparently confined to newborn infants in hyperendemic areas up to three months of age: the only positive information available is that breast milk inhibits the multiplication of parasites in the red cells. This is apparently due to the lack of an essential parasite growth-factor in human milk, para-aminobenzoic acid.

Infection by filarial worms is widespread throughout the tropical areas of the world and, in particular, the West Indies. These infections present in many different ways, the classical end form being elephantiasis. However, the infection may be present for many years, unknown to the patient. The adult worms inhabit the lymph channels and body cavities and give rise to larval forms, the microfilaria, of the blood. The insect vectors of this disease vary in different parts of the world, and it is of interest that the family *Simuliidæ*, of which our own beloved black fly is a member, is an important agent for disseminating the disease in the West Indies, in particular Puerto Rico.

Until recent years this was a tragic disease for which there was no hope of cure but in 1949, diethylcarbamazine (Banocide or Hetrazan) became available for the treatment of the early stages and this has proved of tremendous benefit in reducing the carrier rate by mass treatment and thus the general over-all infection. The treatment itself has, however, introduced a further problem in that the destruction of the adult worms in the body causes products to be liberated which are followed by sensitivity reactions of great severity in a similar manner to those in hydatid disease, syphilis and leprosy. They are most commonly seen in treating the cutaneous and ophthalmic forms of onchocerciasis and loa loa.

In recent months there have been cases of animal rabies reported in southern Ontario. This

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animal disease is endemic in the northern parts of Canada in many forest-dwelling animals (dogs, wolves, foxes and other carnivores) and can cause infection in all warm-blooded animals. It therefore presents a small but constant hazard, but fortunately no human cases have been recorded for many years. All patients who develop rabies die. It is not my purpose here to describe the manifestations of the disease, which are quite horrible, but rather to draw attention to the endemicity in this country and the precautions which should be taken both by inoculating animals prophylactically with a suitable vaccine and the vaccination of human patients who have been infected by a rabid animal.

The incubation period varies within very wide limits and cases have developed many months after exposure. The disease resembles severe tetanus and strychnine poisoning but death occurs early and is preceded by paralysis and coma, although mental faculties are extremely well preserved until near the end. Human rabies infection gives the attending doctor and helpers a feeling of utter hopelessness, and one's depression can be profound. In children, the significance of their illness is not apparent to them, but in older, more intelligent patients the knowledge of what they are suffering from may cause additional agony to them, particularly as the mind remains absolutely clear till near the end. It is necessary to point out that, because of the small but significant risk of developing severe nervous sensitivity reactions, a course of anti-rabic vaccination should not be given without good evidence that the patient was exposed. In the tropics this is not always feasible, as it may be difficult to obtain the evidence and the risk has to be taken if the suspected animal cannot be observed over a ten-day period. Too often, the animal has been killed and his brain is not available for examination for Negri bodies. Rabies may present as a rapidly progressive ascending paralysis. This occurs very rarely but several recent cases have been observed in the infections carried by vampire bats in the West Indies and South America.

It may be asked what all this talk of bizarre tropical disease has to do with medicine in Canada. A glance at any of the attractive maps and folders provided by the enterprising travel agencies advertising sea and air travel will show the ramifications and the links which Canada has with remote but disease-ridden countries. Many Canadians are working overseas in Asia, Africa and South America: many more travel as tourists, in particular to the Caribbean, Central America and the northern coast of South America. Too often, a true appreciation of the possible hazards is lacking and tragedy may lurk around the corner.

During the ten-year period 1945-1955 there have been admitted to Canada as immigrants 180,143 individuals who have come from countries where parasitic disease is endemic and causes considerable morbidity.[12] These people have come from such widely separated areas as China, Italy, Syria, the West Indies and Greece, and may well have introduced a number of non-indigenous parasites to the country with them. It is also worth recalling[13] that typhoid and paratyphoid infections are still endemic in the Province of Quebec and that dysentery, both the bacillary and amœbic types, still occurs in significant numbers in the provinces of Ontario, Quebec and British Columbia. Cysticercosis continues to occur sporadically: all the patients in recent years have contracted the infection abroad, particularly in South America, Mexico, southern Europe and the Far East. Malaria, trachoma, and trichinosis have all been reported in small numbers over the past ten years and it is probable that there are other unreported cases. At the present time there are 15 known cases of leprosy in Canada confined in leprosaria in New Brunswick and British Columbia; one patient admitted during 1954 was of Canadian origin and the source of his infection is unknown.

I would end with the suggestion that clinical history-taking in all returning expatriates and New Canadians should include geographical, dietetic and epidemiological information, if possible, and also, in New Canadians, information as regards their racial and ethnic origin. Many illustrations of the value of such data could be given with regard to infective, metabolic, gastro-intestinal, respiratory and blood diseases, but it is surprising how seldom such information is found in case histories. For instance: because a New Canadian is an Italian, it is assumed he came from Italy and had lived there all his life. This may not be so, if it is remembered that the former Italian colonies extended well down into the tropical zones and he may well have come from such a place.

Therefore, such bizarre but interesting diseases as leishmaniasis, malaria and schistosomiasis may have to be included in the differential diagnosis of obscure fever and bizarre clinical pictures.

I wish to thank the Department of Citizenship and Immigration and the Department of National Health and Welfare, Ottawa, for their co-operation in supplying me with information concerning immigration and disease statistics.

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PULMONARY VENTILATION IN PHYSICAL MEDICINE

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OVER A HUNDRED and fifty years ago Josiah Wedgwood founded the famous Beddoes Pneumatic Institute near Bristol. Great things were achieved there, but because the benefits claimed for inhalation therapy then practised were not carefully analyzed some disrepute inevitably followed. Today those who practise physical medicine, when trying to treat various respiratory diseases, sometimes employ forms of therapy the object of which may not have been critically examined. I would like to present some controversial ideas which may provoke more assessment of the present methods.

Electromyography has shown that in a normal person the muscles of respiration undergo rapid changes to bring about relaxation at the end of inspiration. It is unlikely that this rapid relaxation can be actively improved upon in treating the so-called "tension" of respiratory muscles, said to occur in certain conditions.[1] More myographic studies are therefore needed in the evaluation and treatment of patients with such conditions as emphysema and asthma.

As regards "localized" breathing, it is probable that selective movement of a part of the chest wall is not necessarily accompanied by better ventilation of the underlying lung. Conversely, it is hard to envisage the development of the ability to underventilate voluntarily or "rest" an area of lung. Some such restrictive type of pulmonary ventilation has frequently been advocated in the past, particularly for the treatment of pulmonary tuberculosis. It is noteworthy that stimulation of one phrenic nerve leads to almost equal ventilation of both lungs. The claim to be able, voluntarily, to ventilate independently only one lung is not easily dispelled from many ardent physiotherapists' minds after they have spent years perfecting such "trick" breathing (Figs. 1 and 2). The obvious fact that a period of such ventilation, with active circulation in the "unused" lung, is incompatible with life must, it seems, be supported by further bronchospirometric studies!

It has long been maintained that it is improbable that the majority of human beings can have cortical voluntary control over any organ of which they have no conscious knowledge—this applies to the diaphragm. Most of us can vary the extent of the movement of the diaphragm only by means of the partial control of depth of respiration which we possess. If the abdomen protrudes markedly on inspiration, it does not necessarily mean that the diaphragm is very low; neither does it mean the diaphragm is stationary if the abdomen is scaphoid on inspiration.[2]

It is certainly possible for the emphysematous patient to develop the expiratory phase of ventilation, with a resultant increase in tidal volume, but even then the reduced intrapulmonary mixing is often unaffected. Also, during physical exertion, patients cannot perform their breathing exercises and invariably revert to their usual type of breathing. The suggestion made by some authorities that inspiration should be passive and that efforts should be made to reverse the normal method of breathing seems incredible. The pattern and shape of air velocity curves obtained during inhalation and exhalation by pneumotachography[3] do not appear to be under voluntary control in health or dis-

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Fig. 1. — Photograph of a trained physiotherapist breathing with her left lung only—double exposure at rest and the point of deepest inspiration.

ease. It is very unlikely that the mode of breathing can ever be permanently changed or that exercises can ever be more than unnatural conscious acts.

It is sensible to pay attention to posture, as vertical movement of the chest cage can clearly be increased by flexion and extension of the spine; also short rapid expiratory efforts do seem to help patients to overcome dyspnœa in an unexplained manner.

On the other hand, tight binding of the lower ribs or epigastrium does not appear to change appreciably the ventilation of emphysematous persons; indeed, such constriction affects the normal person's ventilation to an insignificant degree.[4]

The physiotherapists can claim most success in conditions in which respiratory dysfunction

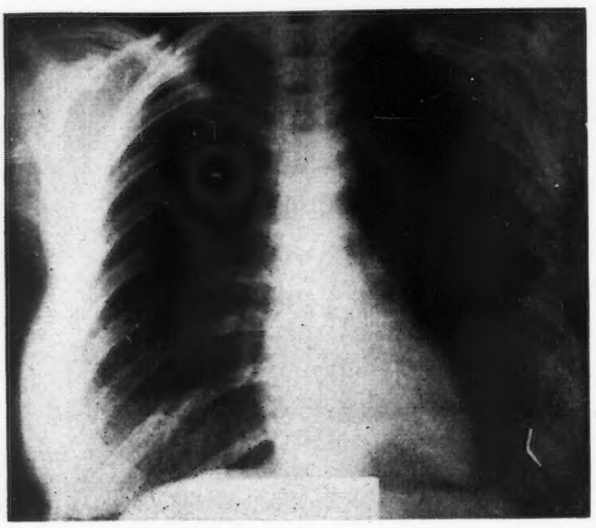

Fig. 2.—Roentgenogram taken under the same conditions as in Fig. 1 with no significant evidence of increased radiological lung volume on the left. Note particularly the marked movement of the right side of the diaphragm.

is aggravated by the presence of pulmonary secretions, e.g., bronchiectasis, pulmonary tuberculosis, and lung abscess.[5] In all "wet" chest conditions it is postural clapping and vibration percussion, particularly when combined with bronchodilation, that produce the best results. This applies most markedly to the care of the postoperative patient.[6] By simple spirogram recordings it is obvious that postoperatively, chiefly of course after abdominal and thoracic surgery, the ability to exhale the reserve air is severely curtailed (Figs. 3 and 4). If one can-

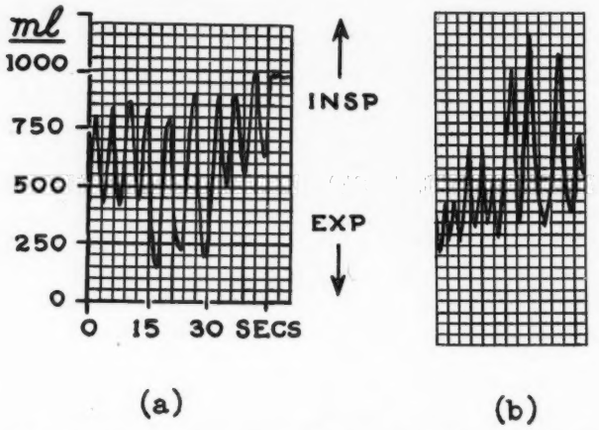

Fig. 3.—(a) A spirogram of a normal person attempting to exhale to the maximum extent. (b) A spirogram of a patient being encouraged to exhale the reserve air during the immediate post-cholecystectomy period.

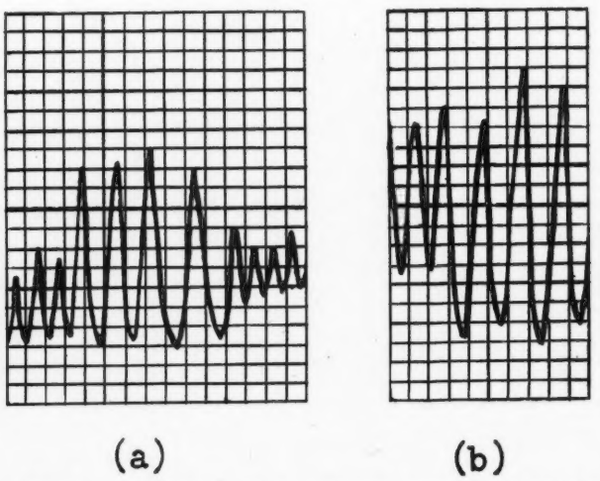

Fig. 4.—Spirograms of a patient's attempt to exhale the reserve air (a) immediately after and (b) two days after an appendectomy.

not expire fully, it is difficult to cough out bronchial plugs and avoid lung collapse, even if the other phases of the ventilation cycle are perfect. It is my opinion that routine class breathing exercises do little to aid the process of expectoration. Simple expirograms may help to estimate the value of various treatments used in this field.

In many instances the area of the bronchial lumen can be enlarged by reducing smoking, humidification of air, or nebulized medication (aerosols). In this way, the resistance to airflow can often be reduced greatly by a very small increase in the diameter of the bronchial lumina.

Modern physiologists, when referring to the forces and resistances involved in the mechanics of pulmonary ventilation, divide them into those due largely to lung and thorax distensibility and those due to airway obstruction. If the compliance is decreased or the non-elastic friction of the moving tissues increased, then surely physical treatment will be most effective if the resistance to air flow within the bronchial tree is minimal. A larger bronchial lumen, intermittent positive pressure breathing, or the use of oxygen and helium will reduce this obstructive resistance and diminish the forces required during breathing.

A more systematized use of various other adjuvants such as air conditioning, sputum liquefaction, exsufflators and analgesics, also seems indicated in an effort to improve respiratory cripples. It would seem wiser, at present, to concentrate more on such simple additional measures than to expend so much time teaching ventilation "exercises" of dubious value.

No one will deny that many patients with respiratory disease experience subjective improvement with the simplest forms of physical treatment, but there is not enough objective evidence of the benefits of physical treatment for pulmonary diseases. For this reason, the newer investigative techniques used in ventilation studies should be applied more often in this field of medicine.[7] It is well to remember that circulatory and blood gas studies should be included if respiration, as a whole, is to be properly assessed; and although ventilation is the main, it is not the only function of the lungs.

It is unlikely that one simple estimate of respiratory efficiency will ever be possible. What is needed is repeated standardized tests, particularly with graded exertion, in individuals, to ascertain their progress under various regimens.

Unfortunately, it is thought today that scientific research necessarily calls for some involved method using a bias elimination system and a statistical plan. It has even been suggested that all volunteers for medical investigation are psychotic, thus invalidating any conclusions arrived at with such subjects. It is therefore likely that clinical impressions, however unscientific they may appear to be, will still be popular for a long time.

I am indebted to Dr. D. MacIntosh and Dr. H. E. MacDermot, Montreal General Hospital, for their helpful criticism of this paper.

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A "HUMAN RELATIONS" APPROACH TO SICKNESS ABSENTEEISM AND OTHER EMPLOYEE PROBLEMS

It is suggested by Wade (*A.M.A. Arch. Indust. Health*, 12: 592, 1955) that a "human relations" program could deal effectively with excessive sickness absenteeism costs. This paper presents an interpretation of absenteeism data collected over a two-year period from a group of approximately 28,000 employees. The author, who is medical director of Esso Standard Oil Company, outlines a program for reducing sickness absenteeism and increasing productivity of employee groups—one which has produced favourable change when tried.

Information from reports and studies prepared by many persons, particularly those in refinery units, is presented in detail. From inferences drawn from them, the author has tabulated the factors which in his opinion influence sickness absenteeism. He classifies these as intrinsic and extrinsic. The intrinsic include the various factors relating to health status and adjustment to job. The extrinsic are those associated with an employee's biological environment and his physical environment.

Certain conclusions which physicians have reached are enumerated and offered as premises upon which to build a constructive program. These include the inevitability of a certain amount of sickness absenteeism, the importance of the employee's life situation, the necessity for proper use of sickness absenteeism privileges, the effect of maladjustment and the importance of increased vigilance and supervision on the part of management.

Certain factual information must be available before any program of action can be tried. This includes simple, easily maintained attendance records, objective evaluation of the employee's job performance at regular intervals, and adequate medical information. With this in mind, a program can be established requiring cooperative effort on the part of many persons at management level. Meetings at regular intervals (probably once a year) are suggested. Pertinent background information regarding problem employees can be presented and discussed by the company physician, the employee relations representative, the department head, the supervisor, and the employee relations officer.

It should be the goal of this group to match men and jobs so that optimum productivity results without abuse of manpower. This may require considerable study and ingenuity, but the possibility of improved relations lies in this approach. The result will inevitably be increased productivity and the economic success and security for which employee and employer alike are striving.

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Case Reports

ALLERGIC ENCEPHALITIS

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ACUTE NECROTIZING hæmorrhagic encephalopathy and its classical example acute hæmorrhagic leukoencephalitis are disorders of the nervous system characterized by focal damage of brain and cord, varying from demyelinization to necrosis, where the damage is closely associated with vasculitis. The vasculitis is variously characterized by fibrin thrombi, necrosis and fibrin infiltration of vessel walls.

Characteristically the condition is either: (1) preceded by a prodromal period of upper respiratory infection, sometimes with an interval of apparent recovery, or (2) associated with the administration of drugs, the chief of which are arsphenamine compounds, sulfonamides, streptomycin and PAS, or (3) preceded by vaccination or attacks of measles, influenza, smallpox and chickenpox.[1-4] While in group (3), in some cases, only perivascular demyelinization has been described, it is probable that more critical examination in the future will show vasculitis which is more difficult of assessment in its healing stage. While classically the disease, even when widespread, is confined to the white matter, contiguous grey matter may be involved. Vasculitis is the common denominator for the group and is of a quality which the morphologist associates with allergy. The presence of vasculitis, the relationship to a wide variety of infections and to hypersensitivity to drugs, and (perhaps more tangentially) the relationship of experimental demyelinization to immune mechanisms have all led to the tentative conclusion that the group has a common basis in allergic reactions. Whatever be the ultimate truth, at our present state of knowledge it is convenient to designate the group as allergic encephalitis in order to stimulate enquiry as to possible etiological factors, to remove offending drugs, and to initiate specific treatment. Otherwise we have to fall back on a variety of cumbersome terms, the use of which might all too readily lead the clinician to consign the diseases to the limbo of encephalitides of unknown etiology.

It is our purpose to describe two cases belonging to this group, one associated with the therapeutic administration of antituberculous drugs, the other of unknown etiology and followed by complete recovery.

CASE 1.—Encephalitis secondary to antituberculous drugs.

Clinical History—K.B.M., a 40-year-old housewife, was transferred to Victoria General Hospital from Point Edward Sanatorium on May 14, 1953.

Her tuberculous disease was first diagnosed in July 1951, on routine x-ray. Admission to hospital was advised at that time, but for some reason she did not present herself for treatment until June 1952, when she was found to have advanced bilateral pulmonary disease with cavitation. During the next ten months she received streptomycin in intermittent dosage to a total of 85 g., daily PAS to a total of 3972 g., and isoniazid to a total of 5400 mg. Pneumoperitoneum was also initiated. Her pulmonary disease was improving when present symptoms began, approximately two weeks before admission. Following an injection of streptomycin, she noticed blurring of vision, which then failed progressively until the time of admission, when she could not see to the left of the midline, and the remainder of her vision was also diminished. She noticed loss of appetite and some discomfort above her right eye for one week.

Neurological examination was essentially negative apart from a left homonymous hemianopsia, and, in her remaining field, a diminished visual acuity which fluctuated in degree. Fundi were normal. General physical examination disclosed tuberculous pneumoperitoneum and moderately advanced bilateral pulmonary disease. Investigation disclosed normal temperature, pulse rate 80, sedimentation rate 57, white cell count 6400, Kahn test negative, urinalysis normal, spinal fluid normal for cells, protein and chlorides. The C.S.F. pressure was normal; skull radiographs were normal. The electroencephalogram indicated a gross disturbance of parieto-occipital rhythms on both sides, with almost complete replacement of the normal alpha activity by irregular 2-3 per sec. waves on the right side. At ventriculography no significant elevation of intracranial pressure was found, and the x-rays showed no distortion or displacement of the ventricular system. An aspiration biopsy was taken from the right parieto-occipital region, with results as reported below.

The clinical course was one of steady deterioration with evidence, both clinically and electroencephalographically, of a forward spread of the pathological process through both cerebral hemispheres. She developed hallucinations, paræsthesiæ, pain in the extremities on movement, and convulsions. Her antituberculous drugs were discontinued and ACTH was initiated about two weeks after admission. Her conscious level continued to deteriorate, and death occurred on the 22nd day.

Aspiration biopsy. Smears from the material showed abundant compound granular corpuscles and neutrophil leukocytes such as would lead to a diagnosis of softening, but in addition, in the thick areas of the smear, vessels were seen permeated with leukocytes while one vessel was necrotic and embalmed in fibrin. Paraffin sections of the remainder of the material confirmed the appearances of perivascular softening and leukocytic infiltration but no further examples of dense fibrin infiltration of vessels were seen. In view of the clinical condition and the biopsy appearances a diagnosis

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of allergic encephalitis secondary to antituberculous drugs was made.

Autopsy examination. Chronic fibro-caseous tuberculosis, well walled-off, was present in both upper lobes of the lung. There was also generalized pulmonary œdema. There was nothing else of significance outside of the calvarium. *Brain.* The pia-arachnoid membranes were congested and there was flattening of the convolutions with general swelling of the brain. A hæmorrhagic softening 3 cm. in diameter replaced the right occipital lobe, in the line of the area of needling and involving the grey and white matter. Smaller hæmorrhagic softenings were present in the left occipital pole and in both frontal poles. While the white matter was mainly involved, the overlying grey matter was markedly œdematous and completely softened in places. Complete sectioning of the brain and cord revealed no further macroscopic changes. Paraffin sections from all areas of the brain were examined. Round the areas of softening there was a zone of reaction no different from what one would expect in recent softenings of ordinary type, and a few areas of perivascular cuffing by inflammatory cells. The actual softenings were too liquefied to permit any assessment of special vascular damage. Throughout the entire remainder of the brain there was intense vascular engorgement which must have accounted for most of the general swelling. In the region of the basal ganglia many vessels showed fibrin infiltration of their walls, so that they appeared embalmed in fibrin. Associated with this there were small perivascular areas of microglial proliferation. Stains for myelin showed small foci of demyelinization in the brain stem and near the basal ganglia, but none in the hemispheres outside the areas of complete softening. The circle of Willis and its branches were healthy and free from atheroma, and no chronic disease of vessels was demonstrated at any level.

COMMENT

The multiple cortical softenings imply a vascular basis. This was demonstrated in the needle biopsy but by the time of death softening was too advanced for this to be demonstrated in the affected areas. The essential morphology of fibrin infiltration of vessels was demonstrated at the base of the brain and in the biopsy specimen. Thus the case fits into the general group of allergic vasculitis and is similar to the case described by Cavanagh where streptomycin and PAS were also implicated.[3]

CASE 2. Allergic encephalitis.

Clinical history, G.C.MacK., a 21-year-old draftsman, was admitted to the Victoria General Hospital on May 1, 1955. Beginning two months previously, he had a series of five or six convulsions which were of a grand mal type. They were preceded by a brief aura of dizziness, then loss of consciousness, cyanosis, muscle twitching and rigidity, sometimes incontinence, and followed by a deep sleep. One of these attacks was observed in hospital two days after admission.

On examination, no abnormal neurological findings were present. Urinalysis was negative, Hb level 95%, white cell count 7600. Skull x-rays were normal. E.E.G. showed no specifically abnormal discharge. Pneumoencephalography was discontinued when he was found to have a spinal fluid pressure of 450 mm. of water. The spinal fluid had normal cell count, sugar, protein, and chlorides. He subsequently developed some congestion of his fundi. At ventriculography, on May 12, his brain was found to be tight and bulging on both sides. The x-rays showed a slight ventricular shift to the left side, both anteriorly and posteriorly, with no localized deformity, suggesting either a subdural hæmatoma or a diffuse tumour on the right side. Two exploratory burr holes were made over the right hemisphere. No hæmatoma was found. On passing a needle into the central part of the right hemisphere, the tissue was found to be extremely soft and almost watery in consistency, and at the time he was felt to have either a very œdematous lesion or a tumour occupying a large part of the central part of the right hemisphere. Needle biopsies were taken and reported as outlined below. In addition to his anticonvulsant drugs, cortisone therapy was begun upon recognition of the biopsy as an allergic encephalitis. During his hospitalization of six weeks, he ran a low-grade fever, 99° to 100° F. He remained conscious and rational throughout, with no localized paresis. He complained of headache and was irritable for about ten days after his air studies and biopsy, but then became ambulatory and normal to clinical examination. He went home, taking anticonvulsant drugs and cortisone, on June 15. At follow-up examination on August 4, 1955, he had remained free of seizures and was alert, active, ate and slept well. His papillœdema had subsided, and there were no neurological abnormalities. The E.E.G. showed a resting background of 9-10 per sec., symmetrical and well regulated. The greater part of the tracing was within normal limits, but there was an occasional isolated rather high voltage wave originating in the left parieto-occipital region. After diagnosis, medication was as follows: cortisone 50 mg., t.i.d., terramycin, 250 mg. b.i.d. for four weeks; low salt diet. On discharge after one month, the cortisone was continued at home for six weeks as above and then reduced to 12.5 mg. b.i.d. for six weeks.

Aspiration biopsies, right hemisphere. Smears from both aspirations showed very cellular material for which, in association with the history and surgeon's findings, the pathologist gave a tentative diagnosis of diffuse astrocytoma. This diagnosis was withdrawn on examination of paraffin sections on the following day. Both specimens were similar. A small amount of grey matter was present and this showed shrinkage and acidophilia of the cytoplasm of neurons and deeply staining eccentric nuclei. The white matter showed extensive damage. There was a universal vasculitis. All the vessels were seen to be obscured by a round cell infiltration and on close inspection the endothelial cells, when identified, could be seen to be swollen, proliferated or pyknotic; the connective tissue of the walls of vessels when visualized was swollen and acidophilic. The appearances were similar to many nodular lesions of the skin which we have examined in known drug reactions. The affected vessels were surrounded either by a cuff of round cells and leukocytes or by a zone of boggy ground substance, while throughout, but particularly near vessels, there was a general increase of microglia (and possibly to some extent astrocytes) (Figs. 1 and 2). No inclusion bodies or micro-organisms were identified. Thus the surgeon's and the pathologist's evaluation indicated a generalized œdema and early softening of the centre of the right hemisphere associated with a generalized vasculitis.

While vasculitis may be associated with rickettsial disease, no such disease is known in the province. Accordingly we made a tentative diagnosis of allergic encephalitis. Many may well argue that our diagnosis was made on very slender grounds. Nevertheless we consider that the treatment with cortisone must have played some part in halting the progression of the

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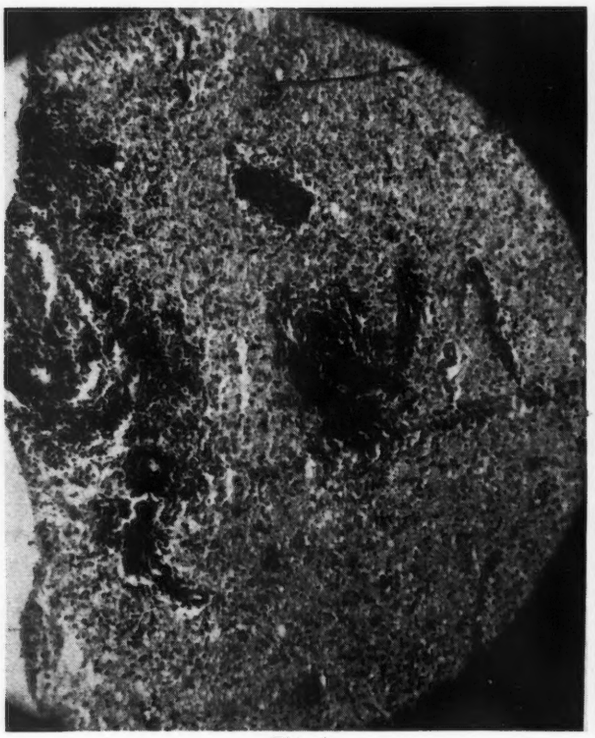

Fig. 1

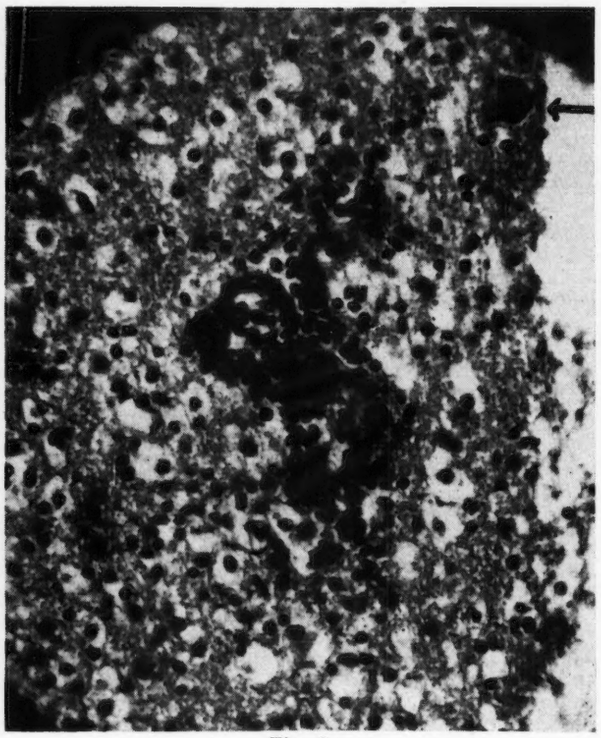

Fig. 2

Fig. 1.—Needle biopsy of white matter showing vessels obscured by round cell infiltration and cellular reaction in grey matter (Case 2). Hæmatoxylin and eosin. **Fig. 2.**—Needle biopsy from edge of grey and white matter. In the centre a small vessel is obscured by cellular infiltration and there is microglial proliferation in the surrounds. The arrow marks a pyknotic neuron (Case 2). Hæmatoxylin and eosin.

pathological process. This would suggest that our diagnosis was correct.

Altogether the case has some curious aspects. The surgeon did not consider that the condition he encountered could be followed by complete recovery. The pathologist at the time considered that the appearances of the material removed were certain harbingers of a fatal issue. It would appear that the brain has a range of morbid plasticity that is not commonly appreciated. Also at the time of the operation the patient must surely have reached a peak in his disease when any further progression had to leave permanent damage. Whether at that very time of operation the disease had run its full course and the morbid process was naturally halted or whether the cortisone therapy was a decisive factor we cannot tell, but, if faced again with the situation, we would use cortisone, because the turn of events was miraculous, and we poor sinners have still more faith in drugs than in miracles.

SUMMARY

1. The use of the term allergic encephalitis is briefly described.

2. A fatal case of allergic encephalitis secondary to antituberculous drugs is described.

3. The investigation of a young man with sudden development of epileptiform seizures is described. Exploration and biopsy revealed generalized swelling and multiple minute softenings associated with vasculitis in the right cerebral hemisphere. The patient made a miraculous and complete recovery. Cortisone was used in treatment.

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ERYTHROMYCIN: AN EVALUATION FOR CLINICAL TOXICITY

Erythromycin was employed by Ciccantelli and Garry (*Am. J. M. Sc.*, 232: 500, 1956) in a variety of diseases involving 80 patients. The drug is a definite adjuvant to the management of surgical and medical infections, although this aspect was not the primary concern in this study. It caused diarrhœa in 7.4% of cases, but in none of these was this serious and in only one case was discontinuation of the drug necessary. No fatalities were attributable to the drug, nor did the authors encounter sensitivity reactions or renal or hepatic damage.

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ALLERGIC GRANULOMA INVOLVING THE NERVOUS SYSTEM*

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INVOLVEMENT OF THE central nervous system is well known in polyarteritis nodosa and in giant cell (temporal) arteritis. Allergic granuloma is the term used for a modification of polyarteritis nodosa where the disease is of an exalted degree but involves only a few segments of the vascular tree. Unlike classical polyarteritis nodosa where there are multiple focal lesions in medium and small muscular vessels, in allergic granuloma the affected segment shows lesions in the vascular tree from the arteries through the capillaries to the veins and, in addition, the surrounding fascia shows fibrinoid necrosis as in the vessel wall. Such lesions lead to gross swelling and sloughing (infarction) of the affected segment. Allergic granuloma is usually seen only as a rare complication of asthma, and involvement of the central nervous system is frequent.[1] The two cases which we have encountered have been in cases of severe asthma of long standing. One case involved the heart. The second case, that of A.S., a 32-year-old male, we describe here.

CLINICAL HISTORY

History of allergy.—Since childhood he had had attacks of asthma once or twice a year but falling off in severity in adult life. In 1941, while on war service in England, he developed chronic sinusitis and since then his asthmatic attacks had been more severe. He related the attacks to periods of mental stress. In 1949 he was in hospital for generalized urticaria.

Carbuncle and sulfonamide medication.—In late August, 1951, he developed a carbuncle on his left shoulder but otherwise felt fit. His family doctor carried out an incision and drainage of minor character and gave him sulfonamides. The carbuncle healed rapidly.

Acute illness suggesting poliomyelitis.—Ten days after sulfonamides had been administered he experienced backache, malaise and fever. These symptoms subsided within a week but five days later the symptoms returned with, in addition, numbness and weakness of the legs. During this time there was an epidemic of poliomyelitis in the area and he was admitted to the poliomyelitis clinic, Victoria General Hospital, as a poliomyelitis suspect.

Transverse myelitis, large subcutaneous swellings and acute febrile illness.—A few days after admission to hospital he suddenly lost the power of his legs and he had no control over bowel or bladder; he stated that he was unable to feel anything in the lower part of his body. He became gravely ill with, in addition, spasm in both lower extremities, depression of chest movements, and weakness in both arms. He also had an acute asthmatic attack and was given ACTH over a period of seven days. His hæmoglobin level fell from 87% to 60% and his serum proteins from 5.7 g. to 4.4 g. in the course of a week. Radiography of the chest revealed a vaguely defined density in the right lung field.

On October 10, 1951, he was transferred to Camp Hill Hospital. There was complete paralysis below the level of the sixth dorsal segment. He was gravely ill, running a high intermittent temperature and requiring blood transfusion to control a severe anæmia. He had a high neutrophil leukocytosis with later an eosinophilia. Radiography of the chest showed marked infiltration. Blood culture was negative and the nature of his illness remained obscure. There were two large hot, painful and reddish swellings, one on the left buttock and one on the posterior thoracic wall. The one on the buttock was incised and drained as an abscess. Its centre was noted to be composed of white necrotic material, not pus. This lesion remained indolent with marked induration and œdema but after several months it healed in with granulating tissue. A biopsy was taken from the swelling at the lower end of the right scapula and was reported as showing an acute collagen disease; in consultation with the pathologist the presence of an acute anaphylactoid reaction was recognized. The patient was placed on cortisone therapy, 100 mg. per day. The clinical picture changed remarkably. He became afebrile, his blood returned to normal, the pulmonary abnormality cleared, and he progressed steadily to normal health with the exception of the complete spinal cord lesion which remained unchanged. He was maintained on cortisone therapy for seven months.

Following the biopsy incision of the scapular lesion, superficial ulceration occurred and the lesion was excised and an attempt made to close the defect by primary suture. A sinus persisted for several weeks but finally the condition healed completely.

Three months after admission, for an interval of 10 to 12 days, a third suspicious lesion posterior to the right hip-joint was noted but this lesion subsided without interference.

Early studies of the cerebrospinal fluid and its hydrodynamics and myelography had ruled out an intrathecal lesion. As the cord lesion had come on abruptly at the same time as the subcutaneous lesions, and as the latter were proven to be allergic granulomas, it was concluded that the lesion in the spinal cord was of the same nature. A series of similar cases have been reported from the Mount Sinai Hospital, New York.[1] While it is generally a complication of severe asthma, we consider it likely that the sulfonamide therapy initiated the complication in our patient.

The patient had an extensive follow-up therapy and is now successfully rehabilitated as a paraplegic. An interesting development of calcification in the soft tissues about the hip-joints was noted early in the course of his convalescence. Such lesions are well known in healing of severe and acute lesions of the collagen diseases.

Biopsy examination.—The wedge biopsy of the skin from the swelling on the back showed generalized œdema of the connective tissues while all vessels were grossly dilated and embalmed in fibrin; much of the fascia was also swollen, necrotic, and embalmed in fibrin. Few cells were present in the tissue, there being only scanty necrotic endothelial cells and necrotic connective-tissue cells (Figs. 1 and 2). From the appearances, a diagnosis of an acute collagen disease (or fulminating allergic reaction) was made, and in association with the history of asthma, the large subcutaneous swellings and the transverse myelitis, a diagnosis of allergic granuloma was confirmed and treatment planned accordingly.

Swelling below right scapula.—This specimen contained a large segment of skin and underlying muscle, grossly swollen and œdematous (Fig. 3). In the centre there was a large cavity filled with amorphous fibrin. In the surrounding tissue the arteries showed the classical lesion of polyarteritis nodosa of proliferative type

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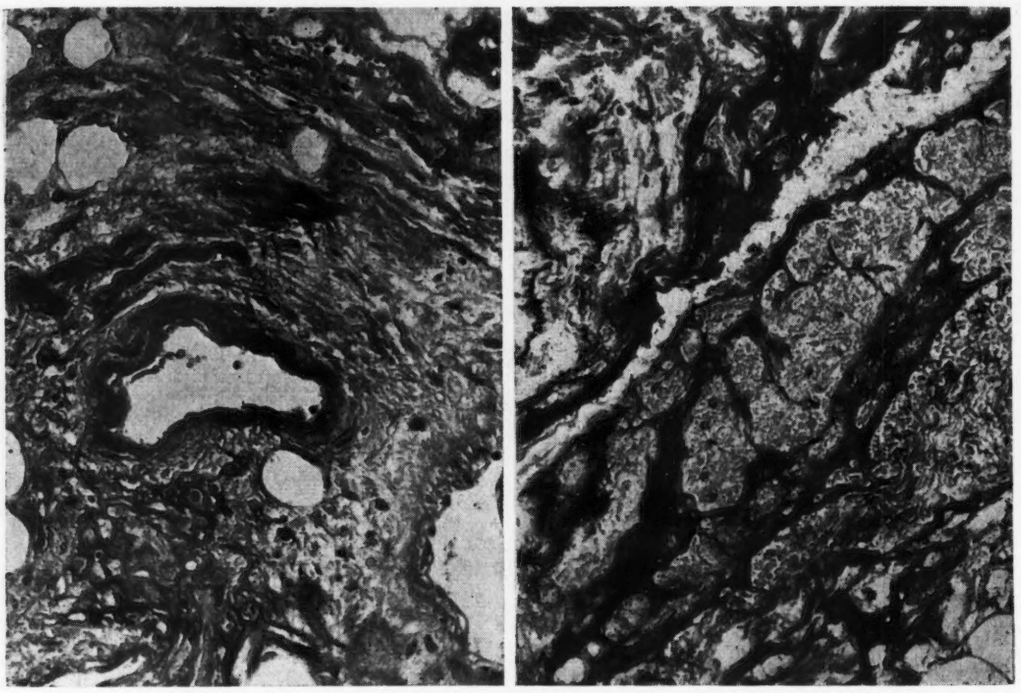

Figs. 1 and 2.—Biopsy of subcutaneous tissue showing gross œdema: fascia and blood vessels are necrotic and embalmed in fibrin. Hæmatoxylin and eosin, × 275.

(Fig. 4). Small vessels and veins showed variously proliferative and degenerative vasculitis. The surrounding fascia and muscle were grossly œdematous and necrotic, collagen fibres often appearing swollen and cast in fibrin.

COMMENT

The term diffuse collagen disease commonly calls to mind a chronic disease of connective

Fig. 3.—The excised granuloma.

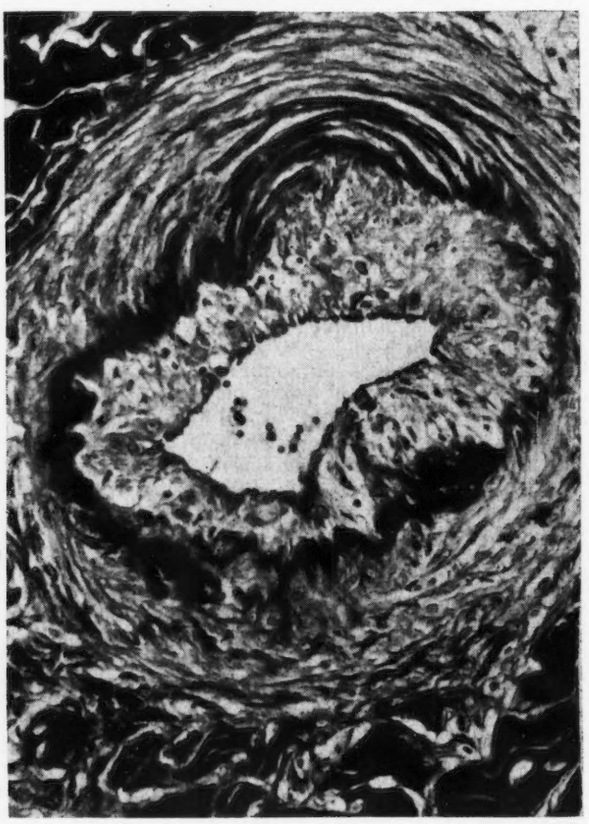

Fig. 4.—Artery showing healing polyarteritis. The serpiginous black area in the cellular intima represents "fibrinoid". Iodine-Mallory, × 120.

tissues. While polyarteritis nodosa may be of long standing and show evidence of healing and recrudescence, it usually presents as an apparently single violent reaction. Though cortisone apparently conditioned the sequence of events in this case, manifestly there was a relatively localized and shortlived but exalted anaphylactoid reaction involving a few but large segments of tissue and involving the whole tissue as opposed to the vessels alone. No doubt the spinal cord was involved in one of the zones of reaction. It is noteworthy that the relatively small initial biopsy provided the clues essential to an understanding of the condition.

Fibrinoid necrosis of connective tissue is a conspicuous finding in the acute collagen diseases and in focal lesions in acute anaphylactoid allergic reactions. While there is much argument as to the nature of "fibrinoid", the lesions in the initial biopsy in this case gave intense positive reactions for fibrin with Gram's stain. The appearances are most reasonably explained as an adsorption of fibrin from the blood on the disintegrating collagen. On the other hand, the lesions of healing polyarteritis nodosa observed in the second specimen showed fibrinoid necrosis of collagen where the "fibrinoid" areas did not stain strongly with Gram's stain. We venture to assume that fibrin adsorbed to the disintegrating collagen had by this time undergone a metamorphosis.

SUMMARY

The use of the term allergic granuloma is described. The condition is illustrated by a young adult with severe asthma who developed a grave febrile illness with large swellings of the back and transverse myelitis. The patient, though now a paraplegic, made a remarkable recovery. Cortisone was used in treatment.

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HIGH PRESSURE SALESMANSHIP

High pressure salesmanship is not confined to this continent, as witness an ad. in *Guy's Hospital Gazette*, London, England, for a dental practice:

"The red plush has been curetted, the foot engine electrified, the bur reground, the probe re-bent and sharpened and a surgery (with no view at all) is ready for an assistant in an old-established dental practice a stone's throw from the sea in a West Country town. Hordes of screaming children, hundreds of edentulous mandibles extremely difficult prosthetically and reams of expired form EC17—but the rest is easy. Reply early before N_2O cylinder runs out."

POLYARTERITIS NODOSA*

REPORT OF A CASE WITH PROOF OF DRUG ALLERGY

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WHILE MANY BELIEVE that the experimental and clinical evidence for the allergic basis of polyarteritis nodosa is approaching completion, others dispute this view.[1]

In a recent discussion on hypersensitivity and the collagen diseases at the Royal Society of Medicine, London,[2] Dr. G. A. Rose is reported to have stated in relation to polyarteritis nodosa that "Although the text books categorically incriminated hypersensitivity in this condition there was little corroborative evidence of this. Drugs, especially sulfonamides, were much blamed, but it was seldom clear whether drug treatment had really preceded the true onset of polyarteritis, or whether exacerbations were consistently produced by the drug." . . . In a survey of 111 cases of polyarteritis for the Medical Research Council, Dr. Rose had reached tentative conclusions. There was a frequent association with bronchiectasis, chronic bronchitis, and acute streptococcal respiratory infections. The infection itself, and not the drug used in treatment, was the probable cause of the onset of the disease in these cases. While sulfonamides were apparently associated, it was usually because of a respiratory infection that they were used. A disproportionately high incidence of rheumatic fever or a history of it in his series (12%) supported the etiological role of the streptococcus. In our experience, with a hospital population not overloaded with chronic respiratory disease as in the great cities of Britain, about half the cases are associated with drug therapy or a long history of allergy, particularly asthma. While the other half "come out of the blue", there is frequently an antecedent history of sore throat. In the same discussion at the Royal Society of Medicine Dr. E. G. L. Bywaters is reported as follows: *"Patch and scratch tests, and passive transfer of cells or serum supposedly containing antibody, were unlikely to be useful, even if more knowledge of the related antigens was forthcoming. The classical* in vitro *methods of immunology were useless; progress awaited an enlargement of our knowledge of cell-fixed antibody."*

It is our purpose to describe a case of polyarteritis nodosa, the investigation of which provides a striking rebuttal of the views expressing doubt that drugs are not closely associated with the pathogenesis of polyarteritis nodosa and that tests based on "passive transfer of cells or serum supposedly containing antibody, were unlikely to be useful" in proving the existence of an allergic mechanism.

G.W.G., a 45-year-old white man, was admitted to Camp Hill Hospital on October 19, 1955, with a provisional diagnosis of "Achilles tendonitis".

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Previous history.—Measles and mumps as child; scarlet fever in young adult life with no known complications; investigation in 1951 for "fainting attack" with negative findings. No known history of allergy in patient or family. No known administration of antibiotics or chemotherapeutics until present illness.

Tonsillitis and medication.—In Camp Hill Hospital for treatment of acute bilateral tonsillitis, October 2-6, 1955. Pyrexia of 103° F. and polymorphonuclear leukocytosis were present. There was rapid clinical response to therapy with Dicrysticin (penicillin and streptomycin), 2 ml. intramuscularly, twice daily for three days. On the day following discharge he was given sulfathiazole tablets and received 5 g. in two days.

Fever and Subcutaneous Nodules.—On October 7, 1955, that is, six days after the first administration of Dicrysticin, the patient felt his chest constricted due to soreness of the muscles of the anterior chest wall. This cleared in four hours but his ankles then felt sore. The pain became worse, especially when his feet were in a dependent position, and he had to take to bed with frequency and nocturia, marked headache, fever, and slight swelling of the left forearm. He was admitted to hospital on October 19 for investigation.

Findings on admission.—There was a temperature of 103° F., and two painful nodules on the flexor and dorsal surfaces of the left forearm, marked tenderness over the Achilles tendons of both legs and swelling over the left tendon.

The patient was investigated as a case of pyrexia of unknown origin after there was no response to antibiotic treatment, chloramphenicol, 250 mg. q.i.d., having been given for six days after admission. Investigations were negative, including urinalysis, white cell count, chest and bone radiographs, Widal reaction, throat swab culture and antistreptolysin titre. By this time there were red, indurated and tender nodules—two on the right ankle, one on the left forearm and a fourth over the right temporal artery. A provisional diagnosis of allergic vasculitis was made and the nodule on the left arm was excised for examination. When the biopsy confirmed allergic vasculitis (polyarteritis nodosa), cortisone therapy was commenced (October 28), 200 mg. daily in divided doses for two days followed by 100 mg. daily and later 25 mg. twice daily, on which dose he was discharged on November 30, 1955. The response to cortisone therapy was dramatic, with prompt disappearance of pyrexia, resolution of superficial lesions and joint pain and lessening of headache. While he was at home the cortisone dosage was reduced to 37.5 mg. daily but his headache recurred and was controlled on 50 mg. daily. It is contemplated continuing this for some months. One month after discharge from hospital the patient continued to feel well and physical examination was negative. Subsequently in the absence of symptoms, he developed progressive electrocardiographic changes in keeping with myocardial ischæmia.

From the time intervals, it was suspected that the patient had had a hypersensitivity reaction to Dicrysticin, since polyarteritis nodosa had developed six days after its administration, though we also had to consider sulfonamides since reactions can develop so rapidly after their first administration that they appear to have unmasked a latent hypersensitivity. The patient, in addition to his own illness, had illness in his family at the time, so we first investigated his serum by transfer to other subjects.

Biopsy Report.—The subcutaneous nodule included a muscular artery which showed the classical lesion of acute polyarteritis nodosa (Fig. 1). In addition, all the small vessels in the area showed proliferative vasculitis; either their endothelial cells showed swelling and proliferation or they were obscured by an inflammatory cell infiltrate. In the surrounding œdematous integument, areas of the fascia showed fibrinoid necrosis. While the lesion of classical polyarteritis nodosa is generally described as confined to muscular vessels and their immediate surrounds, tissue may show wider involvement than the vessels.

Fig. 1.—Biopsy of nodule on arm showing polyarteritis nodosa. Half of the media is necrotic and infiltrated by fibrin, and there is cellular proliferation. Arrow marks small vessels showing proliferative vasculitis. Mallory, × 140.

STUDIES ON THE PATIENT'S SERUM DEMONSTRATING SPECIFIC (ALLERGENIC) ANTIBODY.

Prausnitz-Küstner Reaction

December 9, 1955.—Five ml. of blood was collected from the patient, allowed to clot and the serum separated by centrifugation. This was the 63rd day of the patient's illness and he had been on cortisone for 43 days. The schedule of the test is outlined below.

Test A: Volunteer A. Sites 1, 2, 3, 4, 5 each injected epicutaneously with 0.1 ml. of patient's serum to form a wheal approximately 1 cm. in diameter and marked by a circle in indelible ink, 2 cm. in diameter.

Twenty-four hours later: Sites 1 and 2, 0.1 ml. Dicrysticin injected epicutaneously at edge of circle as centre.

Sites 3 and 4. Sites finely scarified and moistened tablets of sulfathiazole strapped with considerable pressure over area.

Site 5. Left as control.

Sites 6 and 7. Control injections of Dicrysticin.

Sites 7 and 8. Control applications of sulfathiazole.

Result.—Six hours after the second applications, sites 1 and 2 became intensely itchy and slightly red, and the following morning at each site there was a firm subcutaneous lump at least 1 cm. in diameter, tender to pressure, slightly itchy, and with slight erythema in overlying skin. One lump was removed by excision and sections showed a generalized vasculitis in the dermis and underlying panniculus. In the centre all the small vessels were obscured by lymphocytes to such an extent that they appeared as dark areas on frozen sections (Fig. 2). Further out the small vessels showed marked

Fig. 2.—Frozen section of Prausnitz-Küstner reaction in skin. The black areas in the dermis represent a generalized obscuring of vessels by cellular proliferation. Methylene-blue, ×20.

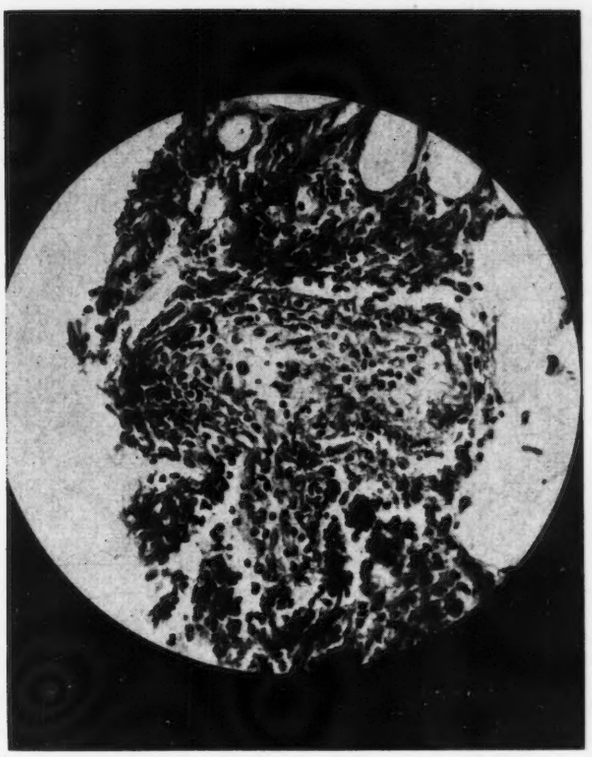

Fig. 3.—Paraffin section of Prausnitz-Küstner reaction in skin. In the centre a small vessel is obscured by proliferation and loosening of endothelial cells and infiltration of inflammatory cells. Hæmalum and eosin, ×300.

dilatation and swelling of endothelial cells, and in an intermediate zone some collapsed disintegrating vessels were surrounded by neutrophil leukocytes including eosinophils (Fig. 3); fine fibrin infiltration replaced degenerating collagen in a few areas of the panniculus. The other lump persisted for three weeks.

Conclusion.—The patient's serum and Dicrysticin had produced a reaction in the volunteer with the pathology of allergic vasculitis similar to many lesions which we have examined in patients with known drug reactions.

Test B: Volunteer B. December 16, 1955. A fresh batch of serum was obtained from the patient and the test carried out as before, this time for the constituents of the Dicrysticin.

Site 1. Serum + penicillin G potassium (24 hours later).

Site 2. Serum + dihydrostreptomycin (24 hours later).

Site 3. Serum + streptomycin sulfate (24 hours later).

Site 4. Serum control.

Results: Six hours after the second injection, site 1 became intensely itchy but there was no reddening and only questionable induration. The other sites were normal. The following morning, site 1 was still itchy but no definite swelling developed.

Conclusion.—The patient's serum and penicillin had induced a reaction in the volunteer but not of the order of the reaction in volunteer A. Accordingly, the test was repeated for penicillin with the same batch of serum as in volunteer B but mixing the serum with a suspension of cells from the buffy coat of the patient's blood sample. The interval between first and second injections was cut down to six hours, as compared with 24 hours in the other tests, and the amounts doubled.

Test C: Volunteer C. December 19, 1955.

Site 1. Serum-cell suspension + penicillin G (six hours later).

Site 2. Serum-cell suspension, control.

Results: When examined 12 hours later, site 2 was normal but site 1 showed a subcutaneous lump approximately 1 cm. in diameter with slight erythema of the overlying skin. The area was excised and paraffin sections showed appearances similar to the nodule in volunteer A except that the vasculitis was not obscured by a round cell infiltration.

Conclusion.—The test on volunteer C showed conclusively a reaction between the patient's serum-cell suspension and penicillin G, of the order of allergic vasculitis.

Solutions: 0.1 ml. of patient's serum was used in volunteers A and B and 0.2 ml. in volunteer C in each injection. Drug injections: 0.1 ml. Dicrysticin was used in volunteer A in the following concentrations per ml.: 2000 units, penicillin G potassium; 6000 units, penicillin G procaine; 5 mg. dihydrostreptomycin; 5 mg. streptomycin sulfate.

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Drug injections, 0.1 ml., in volunteer B and 0.2 ml. in volunteer C, had the same concentrations of the appropriate drug as above.

DISCUSSION

Our patient, a staff sergeant in the R.C.M.P., used to making critical observations, is most emphatic that the illness which he developed on October 8, 1955, was quite different from the illness for which on October 2 he received Dicrysticin and later sulfonamides. The second illness was manifestly polyarteritis nodosa. He had never had antibiotics before. The Prausnitz-Küstner reaction and its modifications, by which the patient's serum is allowed to adsorb to a volunteer's tissues which are later exposed to the suspected sensitizing agent, is much talked about but seldom performed. There can be no doubt that by this reaction we have demonstrated that the patient had a circulating and potent immune body which could react with Dicrysticin and, in particular, with its penicillin moiety, to produce in volunteers a condition similar to spontaneous allergic (nodular) vasculitis. Thus the evidence is complete that the patient was sensitized by the Dicrysticin injection in the manner of serum sickness.

The patient presumably had an intracranial vascular lesion as part of his disease, which accounted for his headaches. His headaches returned when cortisone dosage was reduced. Since there was an obvious element of risk and since he had demonstrably a very potent circulating immune body capable of reacting with penicillin, we did not consider it wise to proceed with direct test of the patient's reaction to penicillin at the time.

SUMMARY

Six days after administration of Dicrysticin for acute tonsillitis a patient developed an illness proven to be acute polyarteritis nodosa. Response to cortisone was dramatic. The patient had never had an antibiotic before. It has been demonstrated that he developed a circulating immune body capable of reacting with Dicrysticin, and in particular its penicillin moiety, to produce locally the condition of nodular vasculitis in volunteers. The evidence is thus complete in this case that the polyarteritis was an allergic reaction to penicillin.

We wish to thank Mr. Luigi Lazarrotto for acting as one of the volunteers; Professor Aldous for advice in preparation of solutions; and Mrs. Linda Currie for clerical assistance.

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BLIGHTED TWIN

(REPORT OF THREE CASES)

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THE TERM "BLIGHTED TWIN" is used when one member of a twin pregnancy dies and is retained *in utero* while the other twin carries on to a viable birth. The amniotic fluid of the blighted twin is absorbed and the fetus becomes dried out and flattened; it is known as a "fetus compressus" or, if the process is carried on to a further degree, as a "fetus papyraceus", a term which is well known to every physician, though the condition itself appears to be rather uncommon.

It is generally believed that death of one twin is due either to cord complications or in uniovular twins to competition between the twins for placental blood supply. If one twin becomes dominant, it may deprive the other of blood supply and the smaller twin may die.

Kindred[1] in 1944 made a survey of world literature and discovered 150 cases of blighted fetus, none of which had been reported from Canada. A few additional cases have been reported since that time. This case report covers three cases of blighted twin which occurred in the Kelowna General Hospital between October 1954 and April 1955.

CASE 1.—Mrs. E.C.B., gravida-6, expected date of confinement (E.D.C.) October 26, 1954.

This woman had been feeling well and carrying on an apparently normal pregnancy until about 7:00 a.m. October 1, when she began to have some mild uterine cramps. At 9:30 a.m., she passed a macerated male fetus of about four months' development. The umbilical cord was very tight around the baby's neck and this was probably the cause of death in this case.

Examination showed the presence in the uterus of another fetus with a normal heart sound. The patient was brought to hospital; about noon she began to have active labour and at 2:30 p.m. delivered a premature male infant weighing 4 lb. 9 oz.

Fig. 1. (Case 1).—Normal and blighted twins.

The placenta was slow to separate but finally was expelled about half an hour after the birth of the baby. There was a double placenta which was fused along the adjoining edges. One placenta appeared normal. The other was white, hard, and fibrotic; it apparently had been inactive for several months, and had become completely fibrosed.

There were separate membranes and this was a double ovum pregnancy.

CASE 2.—Mrs. I.J.H., gravida-4. E.D.C. December 22, 1954.

This patient gave a history that in the third or fourth month of pregnancy an abortion was attempted, when the membranes were ruptured and the amniotic fluid drained away. However, the pregnancy continued and in August 1954, she was admitted to hospital in Victoria, B.C., as a case of hydramnios, her abdomen having become very swollen in the preceding nine days. The swelling subsided under treatment, and radiography showed a twin pregnancy. She was discharged from hospital and later moved to Kelowna, where she first appeared for prenatal care in November.

She was admitted to hospital at 8:00 p.m. on December 23, 1954, in active labour. She made good progress and the cervix was fully dilated at 10:00 p.m. Vaginal examination showed the membranes to be intact. The membranes were ruptured and she delivered spontaneously at 10:25 p.m. The baby was a normal female infant weighing 6 lb. 11 oz., delivered by vertex presentation. After a few minutes the placenta presented, and as it came away it was followed by a small macerated fetus still enclosed in its amniotic sac. There was only one placenta, the cord of the normal twin coming from one side of the placenta and the cord of the blighted twin coming from the exactly opposite edge. There was a hard fibrosed mass where the degenerated cord joined the placenta. There were separate amniotic sacs but one chorion, and this was a case of uniovular twins.

This woman was very psychoneurotic and unstable, and her story may not be completely reliable, but it would appear that the first event was an attempted abortion which probably did not rupture the membranes. Later the uterus enlarged rapidly due to the twin pregnancy and there may have been some hydramnios, which subsided with the death of one twin which probably took place at about that time.

Fig. 3. (Case 2).—Normal and blighted twins.

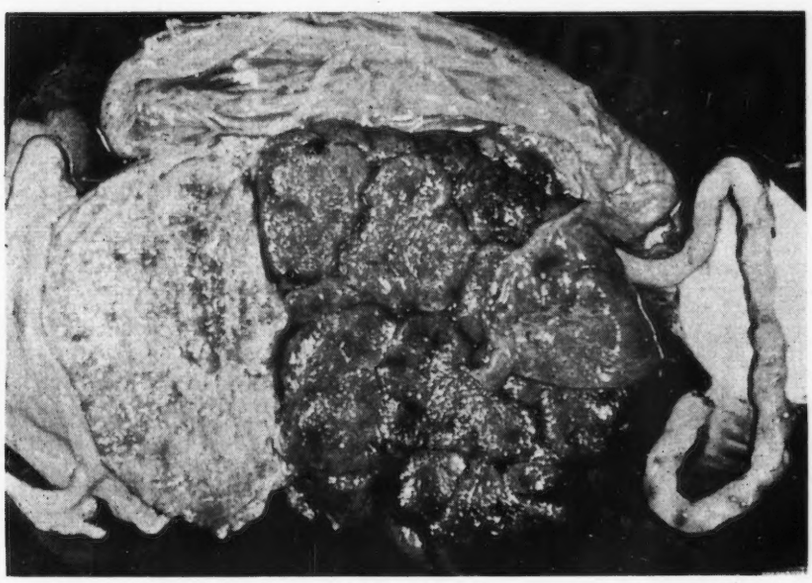

Fig. 2. (Case 1).—Fused double placentæ, one normal and the other completely fibrotic.

CASE 3.—Mrs. C.V., gravida-1, E.D.C. April 4, 1955.

This patient had an apparently normal prenatal course until January 21, when she was admitted to hospital at 11:00 p.m. having regular uterine contractions. These gradually subsided during the night, and she was discharged on January 23 as a case of false labour.

She was readmitted at 5:00 p.m. on January 26 in active labour. Her pregnancy was considered to be of about 30 weeks' development. At 11:30 p.m. she delivered spontaneously a premature female infant weighing 3 lb. 3½ oz. The baby never established good respiration. Its condition gradually deteriorated, and it died at 4:40 a.m. on January 27.

A few minutes after the birth of the baby the placenta appeared to be coming away, but when it was expelled it was found to be not the placenta of the first baby but a separate placenta with the sac intact

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Fig. 4. (Case 3).—Normal and blighted twins.

containing a small macerated fetus, which appeared to be of about three months' development. Most of the maternal surface of this placenta was covered with areas of infarction. A few minutes later the normal placenta of the first fetus was expelled.

This was a double ovum pregnancy in which the cause of death of the one fetus was not apparent.

DISCUSSION

Apart from scientific interest in this condition there are several points of clinical importance which are of interest to any practitioner of obstetrics.

1. Several investigators have noted episodes of vaginal bleeding, acute illness, sudden lower abdominal pain or escape of amniotic fluid coincident with the estimated time of fetal death in multiple pregnancy; such an event should suggest the possibility of twin pregnancy with death of one twin.

2. Late hæmorrhage and infection in the puerperium have been reported by Leff[4] and Greenhill[7] as due to retention of a blighted fetus in the uterus following delivery of the other twin with its placenta. The bleeding may be in the immediate post-partum period or days or weeks later.

3. The presentation of a fetus papyraceus in front of the viable twin may confuse diagnosis during labour. Ter Kuile and Parmele[3] report a case of transverse presentation of a blighted twin across the cervix in front of its viable companion, diagnosed by x-ray and delivered by Cæsarean section.

4. Twin pregnancy should be suspected in cases of hydramnios, and spontaneous disappearance of the hydramnios may be due to death of one fetus, as occurred in Case 2. Rapid improvement in toxæmia may also be due to death of one twin. In this case the death of one twin and absorption of amniotic fluid reduces the intrauterine pressure and alleviates the placental anoxia, which is now widely regarded as the primary factor in pre-eclamptic toxæmia of pregnancy.

SUMMARY

Three cases of blighted twin are reported with a discussion of the clinical features and complications which may be involved in this condition.

I wish to thank Dr. J. S. Henderson and Dr. A. W. N. Druitt for permission to report Cases 2 and 3.

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THE DILEMMA OF THE NONTOXIC NODULAR GOITRE

Certain inferences are made from a study (Schillhammer and Crone: *Ann. Int. Med.*, 45: 480, 1956) of 165 cases of nontoxic nodular goitre and carcinoma of the thyroid. Some of the conflicts in the literature relative to the frequency of carcinoma of the thyroid in nontoxic nodular goitre are reviewed. The frequency of carcinoma in nodular goitre is probably far lower than has been reported in most series or even in this series. The manner of selection of cases is largely responsible for the false picture currently depicting the frequency of carcinoma in nontoxic nodular goitre. It would appear that, if the patient has symptoms, he is more likely to have cancer when he is first seen.

Though it seems likely that carcinoma is more prevalent in those glands containing a solitary nodule (from surgical material), the physician's inaccuracy in detecting the number of nodules present in a given gland makes sole dependency upon such an observation unreliable. It is possible that the use of I^{131} will assist differentiation of carcinomatous and benign nodules of the thyroid.

Until further long-term study clarifies the problem, it would seem appropriate to recommend operation for most cases of nontoxic nodular goitre.

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Clinical and Laboratory Notes

TREATMENT OF TAPEWORM INFESTATION WITH A TIN PREPARATION*

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IN RECENT YEARS, numerous efforts have been made to discover new and safe anthelmintic drugs. The drugs commonly used at present against tapeworms are either comparatively ineffective, or too toxic for use. This holds true for Aspidium filix-mas,[10, 14, 25] quinacrine[3, 12, 23, 24, 28] and hexylresorcinol.[3, 12] Chloroquine has been reported of use, but sufficient clinical experience is not yet available.

Tin was first used as a tæniacide or tæniafuge in the middle ages.[2, 13] It fell into disuse probably because of the difficulty of obtaining purified tin.[2-9] In 1900, tin was again recommended as a tæniafuge.[6] In 1947, some 22 patients were treated for tapeworms without side-effects.[9] In 1948, it was pointed out that though the head of the tapeworm had not been recovered, proglottids or ova were not discovered in the stool after three months.[1]

MATERIAL AND METHODS

After pharmacological tests for toxicity had been carried out in dogs, we began to treat patients with tapeworms with tablets consisting of powdered metallic tin (0.58 g.), tin chloride (32.5 mg.) and stannous oxide (150 mg.) (Cestodin). We reported the results of treatment in 110 patients in 1951.[13] Kuhls extended the work and in 1953 published a cumulative series in which Cestodin was used.[15] Others have since reported patients treated with tin.[19, 21, 29, 30, 34]

Pretreatment: Starvation, special diet, hospitalization and bed rest are not absolutely necessary in tin treatment of tapeworm infestation. A saline purge beforehand is also not an absolute necessity,[9] though we used one in most of our cases. We treated 202 patients with tapeworms, 85 in hospital. Most of the patients were treated in Germany, but several have been treated in Manitoba and Saskatchewan. The youngest patient was 9, the oldest 82 years of age. The patients had a wide variety of associated conditions, as shown in Table I, though most were hospitalized for treatment of tapeworm infestation.

TABLE I.—CONDITIONS ASSOCIATED WITH PATIENTS TREATED FOR TÆNIASIS

Diagnosis	*Number of patients*	*Remarks*
Gastritis	16	confirmed by x-ray examin.
Peptic ulcer	3	
Post-gastrectomy	3	
Acute cholecystitis	4	
Severe anæmia	1	after splenectomy
Tuberculosis of lungs	3	
Heart failure	6	
Glomerulonephritis	1	after scarlatina
Laennec's cirrhosis	1	
Thyrotoxicosis	1	
Diabetes mellitus	1	

Cestodin tablets were given after each meal for 5 days, 15 tablets being used in all. For children aged 8-12, the dose is reduced to 1 tablet twice a day for 5 days, and for children below 8, to ½ tablet twice a day for 5 days. On the last day, 50 c.c. of 25% $MgSO_4$ was given with a glass of water, as a saline purge. During treatment, the patients continued their usual activities. Repeated examinations of leukocytes, serum bilirubin, non-protein nitrogen, urinalysis, and liver function tests (Takata, thymol turbidity) were carried out.

Follow-up studies on stools were carried out for four months in all patients; 83 patients were followed up from one to three years.

Types of worms: 197 patients were infested with *T. saginata*, 3 with *T. solium* and only 2 with *Diphyllobothrium latum.* (We had no chance of treating any patient infested with *Hymenolepis nana.*) In 2 patients, infestation with *Ascaris lumbricoides* was also present. However, there was no evidence that tin was effective against *Ascaris.*

RESULTS

The head of the worm was never found. The worm itself was expelled as a rolled-up mass within the first 2-3 days and was usually quite active and not markedly discoloured. Later, the passed worms were discoloured and partly digested.

Of 202 patients, 16 relapsed or were reinfested in 2-4 months, and 6 others had a relapse or reinfestation after four months. Thus 90% of patients were successfully treated. A second course of treatment cured 4 out of 16; 12 remained infested, despite 2-3 courses of treatment.

SIDE-EFFECTS

Colicky abdominal pain occurred in 9 patients, particularly on the 2nd, 3rd and 4th treatment days; 12 patients had nausea, and vomiting occurred in 9. Thirty-five per cent of the patients had a sense of pressure or fullness in the abdomen. In only one case did the treatment have to be discontinued, because of per-

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sistent vomiting. In the others, side-effects were minimal.

In no case were harmful effects noted on the leukocytes, liver, or kidneys as judged by the tests mentioned previously.

DISCUSSION

No contraindications to the tin treatment of human tapeworm carriers are yet known. The drug worked in patients with or without gastric acid. The mechanism of action of tin on the tapeworm is uncertain. It seems unlikely that this is a "mechanical" tæniacide,[9] as iron and lead do not have similar effects. We could not demonstrate tin storage in the expelled worms (using the method of Eegriwe[7] and Feigl[8]). This would seem to refute the hypothesis that tin becomes attached to the worm in significant amounts (Montel). Perhaps tin blocks some enzyme system essential to the worms' health.

Harmful effects of tin on humans have not been reported.[1, 6, 9, 11, 21, 22, 25, 34] Over long periods of time, with large doses of tin, toxic effects may appear in animals.[16, 33]

The successful treatment of 90% of patients, with a minimum of side-effects, establishes tin as an important tæniacide.

SUMMARY

A tin preparation consisting of pure metallic tin, tin oxide and tin chloride was given for 5 days to 202 tapeworm carriers. In 16 patients relapses occurred in the first four months. In 6 further patients relapse or reinfestation occurred after four months.

The advantages of tin treatment compared with other tæniacides are:

1. There are no known contraindications because of age, debilitating disease, or pregnancy.

2. Hospitalization or intraduodenal intubation seems unnecessary.

3. Patients need not alter diet or habits during treatment.

The successful treatment of 90% of patients, with a minimum of side-effects, establishes tin as an important tæniacide.

I am indebted to Dr. A. Rogers for his kind help with the manuscript.

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FALLIBILITY IN COMPARISON OF AGE-ADJUSTED MORTALITY RATES*

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THE REGISTRAR GENERAL of England and Wales[1] in 1945 emphatically cautioned—and the caution has been reiterated[2, 3]—against hazards in using age-adjusted rates for comparison of mortality from a specific cause at different periods. The fact that age-adjusted rates are still used freely for such comparisons[4, 5] points the need for re-emphasizing yet again their deficiencies and the possibility of error in using them.

Age-adjusting largely eliminates differences in crude rates that might be due to changes in the age distribution of the population, but rates so adjusted do not, any more than crude rates,

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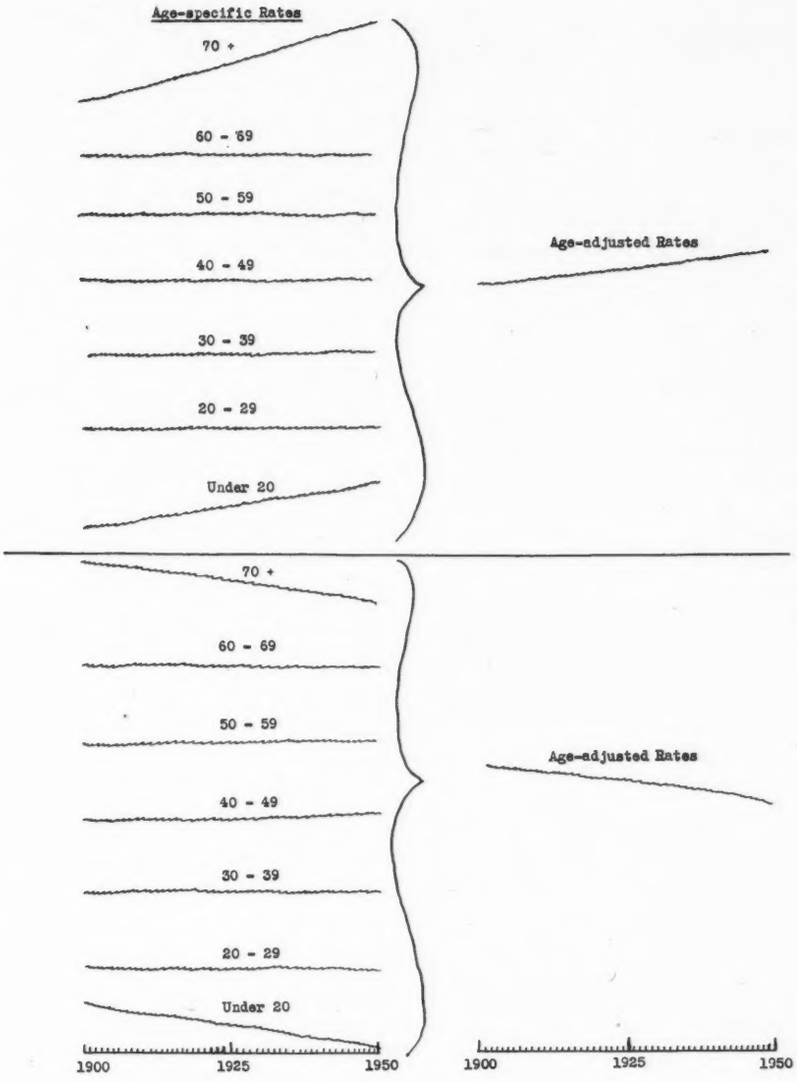

Fig. 1

show differences between the rates, or trends of the rates, of different age groups. Such differences are due to factors, real or artificial, operating to a greater and possibly varying extent in some age groups than in others; they may be, therefore, of prime importance in interpretation of the data. As neither crude rates nor age-adjusted rates reveal those differences, neither present adequate data for valid comparison, and either may give an erroneous impression of the actual situation.

While any dissimilar age-specific trends could be used for illustration, some commonly found in officially recorded mortality data are shown in the accompanying graph (Fig. 1). Here the trend of the age-specific mortality rate in old age and of that in young life are in marked contrast to the trends in the other age groups. When fused with the trends in the other age-groups, as shown, the divergence in the old and young obviously influences the trend of the whole, which presents a picture distinctly different from that presented by the age-specific trends. The dissimilarity of the trends in old age and young life may be, and often is, attributable to a greater influence of artificial factors—changes in diagnosis, certification or classification—in these age groups, while the stability of the rates in the other age groups suggests relative freedom from such artifacts. Thus, age-adjusting may combine relatively trustworthy and quite untrustworthy figures, in itself a statistical sin, while, as intimated, it gives no indication of possible consistencies and inconsistencies on which, along with other factors, assessment of the quality of the primary data must be made; that assessment is an invariable requisite in analysis and comparison. Thus, age-adjusted rates should not be depended on for comparison of a specific mortality at different periods until the age-specific rates on which they were based have been shown to be of uniform high quality and similar trend.

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PLACENTA CIRCUMVALLATA

Fifty cases of circumvallate placenta occurring in 2019 pregnancies are discussed by Pinkerton (*J. Obst. & Gynæc. Brit. Emp.*, 63: 743, 1956). The condition is believed to result from separation of the edge of the placenta early in pregnancy, with subsequent curling up of the placental margin. In the antenatal period the condition may cause bleeding which is indistinguishable from that due to placenta prævia. In this series there was a high incidence of post-partum hæmorrhage.

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MEDICAL REVOLT IN THE U.K.

We seem to remember having heard someone say recently that "health is too important to be left to the doctors". The unspoken but implied corollary to this is that the politicians as elected representatives of the whole community should take the responsibility for their electors' health. With some aspects of this thesis we have no quarrel, but when we come to the field of individual medical care the proposition is by no means so simple. In view of the interest in universal health insurance manifested at both national and provincial levels, it might be as well to take a look at the present troubles and discontents in the National Health Service of the United Kingdom. It could happen here!

It must be fairly obvious that good medical care is a two-way relationship. If either the physician or the patient is seriously discontented with the deal, then the quality of the service is going to suffer. Now the individual physician practising curative medicine is a fairly patient person; only a patient person would face the long haul of medical training, and bear with equanimity the trials of a busy practice. Hence when such a patient body of men as our long-suffering British colleagues are goaded almost into open revolt against their employers, the State, something must be very wrong indeed with their conditions of service.

For revolt is in the air; of that there can be no doubt. An editorial in the *British Medical Journal* for January 5, 1957, is headed "Preparation for Action", and the action contemplated is a wholesale withdrawal from the National Health Service. The British Medical Association, by its constitution, cannot undertake trade-union activities. It therefore in 1949 formed a body, the British Medical Guild, whose officers and members are identical with those of the B.M.A., and whose function is to organize and carry out in a legal manner action determined by the policy-making body, the B.M.A. If at any time the Representative Body of the B.M.A. advised withdrawal from the National Health Service, the Guild would organize and finance the withdrawal and compensate any member in financial distress as a result of his withdrawal.

What has brought matters in the United Kingdom to this unfortunate pass? On the surface the quarrel is a financial one, but it is clear from the voluminous correspondence in the *British Medical Journal* that the troubles lie deeper than this. For nearly a year the British Medical Association has been making what it believes to be a thoroughly justifiable claim for an increase in pay for National Health Service physicians, basing its claim on the sharp rise in the cost of living since March 1951, when capitation fees were last set, and on the view that the recommendations of the Spens Committee which originally advised on remuneration for practitioners were intended to undergo continuing adjustment as the value of money changed. In its attempts to negotiate with government on these lines, the British Medical Association has apparently been treated very cavalierly. The Association was invited on August 1, 1956, by the Minister of Health to submit a statement of the legal grounds for their assumption that the Spens recommendations laid an obligation on the government to revise rates of remuneration when necessary. The Minister was provided with a long and carefully argued document which he rejected out of hand in a letter of November 21 with a brevity bordering on rudeness, ending with the rather contemptuous suggestion that if the doctors wanted to take the matter to the courts they were free to do so. Even the left wing *New Statesman* comments on this as "a stupidly brusque rejection".

Perhaps it is idle to speak of moral obligations in a matter of this nature, though a later letter from the British Medical Association suggests to government that "implicit in the contractual obligation is the moral obligation of both parties to the bargain to honour their promises". The important point is that, if the medical press and responsible journals like the *Manchester Guardian* are a reliable guide, the United King-

dom government has now lost the confidence of most of the medical profession. At a meeting in October the general practitioners of Edinburgh stated that the present structure of the National Health Service was fair neither to the patient nor the doctor, and that it was time medicine was divorced from politics. Unfortunately a divorce is a lot more difficult to arrange than a marriage. To this marriage in 1948 the medical profession of the United Kingdom came—somewhat reluctantly and torn by family dissension—and thereby made itself a chattel of successive Ministers of Health.

The general practitioner in particular has gained neither in professional nor in economic status in the intervening years. The capitation fee system, which has encouraged the rendering of as few services to as many patients as possible, and the general policy of directing all but the most mildly ill to hospitals for their treatment, have led to widespread malaise in the profession.

Perhaps the stresses and strains of the National Health Service are only a reflection of the difference in thinking between politicians and physicians. The physician as a scientist is primarily concerned with a search for truth. This search may lead him along unpopular paths, as in the finding that there is a relationship between immoderate smoking and lung cancer, but he must continue along these paths or medicine will cease to advance. The politician, on the other hand, can only go ahead as fast as his electorate whose thinking he is supposed to reflect. If he strays into unpopular paths, he will soon cease to hold office. So far as one can tell, the National Health Service is reasonably popular with the public, however frustrating it may be to the unfortunate persons who have to work it. Therefore demands for its improvement or reconstruction are likely to fall on deaf ears. It is highly unlikely that the public will demand that they should be made to pay more directly for their drugs and dressings, or that sanctions should be taken against the waste of the general practitioner's time in writing out prescriptions for laxatives and cottonwool. It is unlikely that they will concern themselves with the social or professional status of the general practitioner, or the plight of the chronic and overtrained registrar. It is therefore also unlikely that their elected representatives will concern themselves with these matters.

If and when the time comes for a marriage between the Canadian medical profession and government, some thought should be given to the major discontents in Britain, so that they may be avoided here. The marriage contract should safeguard the interests of both parties, for in matters of health, as in any good marriage, these interests ought to be identical. We repeat—*both* contracting parties must be satisfied with the deal, or it will not work harmoniously. Can such a contract be written? Ask the Australians—they seem to have done it.

Editorial Comments

SERUM LIPOPROTEINS AND CORONARY ARTERY DISEASE

Students of atherosclerosis have suspected for some time that all was not well with the Gofman lipoprotein theory. Reports by Canadian workers to learned societies during the past two years, and published early in 1956, have indicated that the antemortem levels of the serum lipids, including the Gofman indices, had little value in predicting the severity of atherosclerosis found at autopsy. The Committee on Lipoproteins and Atherosclerosis of the U.S. National Advisory Heart Council has now reported a co-operative study that shows, in the majority opinion, a similar lack of predictive value of the serum lipid levels in individuals who subsequently develop clinical complications of coronary artery disease (*Circulation*, 14: 691, 1956, Part Two).

This co-operative study was carried out by research workers of the highest calibre, in laboratories in Cleveland, Boston, Pittsburgh and California. The California group, referred to hereafter as the Donner group, was headed by Dr. Gofman. The procedure was to estimate the levels of the serum cholesterol and of the serum lipoproteins in approximately 14,000 presumably normal men, aged 40 to 59 years, and to compare the lipid data so obtained in those individuals who developed clinical evidence of coronary artery disease over a two-year period. There were 82 of these "new events", and they were vouched for by three eminent cardiologists who made the clinical assessments without knowledge of the lipid data.

The decisions reached in this co-operative study are indecisive. The members of the three Eastern laboratories agree that "the data show clearly that neither the measurement of lipoproteins nor that of cholesterol provided a predictive power for individuals during the two-year observation period of this study". In direct contradiction to this was the conclusion

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of the members of the Donner group who claim that "the co-operative study establishes clearly . . . that elevation of blood lipids precedes clinical coronary disease and predicts it . . ." The Donner group concludes further that "the lipoprotein-Atherogenic Index measurement is superior to the cholesterol in predictive power." The statistical consultant of the co-operative study supports the views of the Eastern laboratories.

It is unfortunate that a study which was so arduous and complex, and so extraordinarily expensive, has been marred by disagreement amongst its co-operating members. The major differences of opinion hinged upon the technique and interpretation of the lipoprotein analyses. The Eastern laboratories measured only the ordinary lipoproteins, and they did this exactly as specified by Dr. Gofman in 1952. But after the project was well under way, the Donner group developed modifications in their diagnostic procedures: instead of the ordinary Sf lipoproteins they insisted on Standard Sf lipoproteins, and instead of incriminating the Sf 12-20 class of lipoproteins they substituted the Atherogenic Index. The Eastern laboratories felt that these new measurements could not be introduced properly into the study since it was already far advanced; the Donner group were adamant about their new indices; and hence the apparent equivocal nature of the final report. Arguments can be advanced, no doubt, for either side, but it would seem reasonable to recommend that the medical profession at large accept the majority opinion. And this means, until more conclusive evidence is forthcoming, that the Gofman indices should not be used as clinical tools for the prediction of incipient coronary artery disease. The Canadian studies, which utilize all of Gofman's indices and relate them to the disease process and not merely to its complications, may give a more exact answer to the question in the not too distant future.

Although not stated in the Heart Council report, it might be inferred that the findings of the majority opinion are damaging to the lipid theory of atherosclerosis. But it must be stressed that the co-operative study was concerned only with the relationship of the serum lipids to the clinical complications of the disease, not to coronary sclerosis *per se*. It is well known that severe grades of coronary atherosclerosis are not incompatible with good health; and conversely, that coronary occlusion may be superimposed on lesions of only minor severity. Nevertheless, it is generally admitted that a statistical relationship does exist between the extent of the underlying disease process and the incidence of complications. And so, if the serum lipids are not concerned definitely with the incidence of complications, it might be argued that they are not of much importance in initiating, or accelerating, the primary disease.

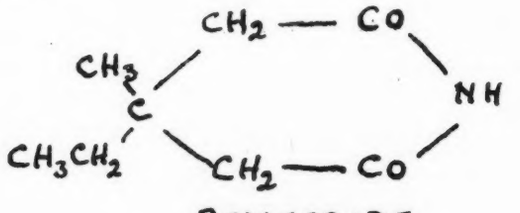
In any event, the findings of the Heart Council, although indecisive, are such that they may counteract to a degree the hypnotic influence which the fats have exerted on North American research workers on atherosclerosis for the past ten years. It is to be hoped that they may also stimulate to greater efforts those dissenters who believe that there is more to atherosclerosis than a defect in lipid metabolism.

J. C. PATERSON

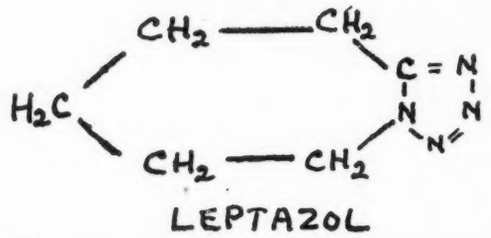
BEMEGRIDE AND AMIPHENAZOLE

During the past eight years, Professor F. H. Shaw and his associates in the Department of Pharmacology at the University of Melbourne, Australia, have been reporting upon new drugs which combat the lethal effects of overdosage of barbiturates and morphine. Of these compounds, bemegride[5] or Megimide* was originally noted to be effective against barbiturate poisoning,[24] and amiphenazole[5] or Daptazole* against morphine poisoning[21, 22] in animals. In barbiturate poisoning, there was some indication that a combination of the two drugs was more effective than bemegride alone and in the first clinical trials[24] both drugs were employed. Most authors who have reported subsequently upon use of this treatment for barbiturate poisoning in man gave both drugs, with good results, but without any systematic attempt to evaluate the respective antidotal merits of either drug alone.[1, 8, 14] Recent evidence from Copenhagen[15] and London[12] as well as from Melbourne[20] indicates that bemegride alone is effective against barbiturate poisoning and is probably the more active component when both drugs are administered.[14]

Bemegride is a stimulant of the central nervous system and a convulsant drug related somewhat to leptazol (Metrazol) in chemical structure:



BEMEGRIDE



LEPTAZOL

*Proprietary name, Nicholas Products.

It is a colourless, crystalline powder, soluble to 0.5% in distilled water, forming a stable solution at a neutral pH. It is available for clinical use as an injection in vials and ampoules containing 5 mg. per ml. Large doses produce convulsions in animals[24] and man[13] and the lethal dose in normal, healthy animals is of the order of 30 mg. per kg. bodyweight intraperitoneally.[24] From the published evidence[14] bemegride may be added to the list of analeptics available for use in the treatment of barbiturate poisoning.

The basic problem in the treatment of barbiturate poisoning is to maintain respiration and blood pressure until the excess of barbiturate has been broken down in the tissues of the body, particularly in the liver.[4] The metabolic breakdown of barbiturates may require several days when very large amounts have been absorbed. There is no effective way of speeding up this removal of barbiturates from the body. If respiration and blood pressure are not seriously affected, the patient will recover by being allowed to sleep while the barbiturate is being destroyed. If barbiturates are present in amounts which are capable of markedly depressing the respiratory centres, leading to apnœa, cyanosis, and accumulation of carbon dioxide, which in itself is narcotic, the patient may die unless measures are taken to restore aeration. At this point, the choice must be made between use of (a) artificial respiration, (b) electroshock stimulation, or (c) analeptic drugs, with or without dialysis through an artificial kidney, and the physician must be prepared to keep up his treatment continuously for several days if required. Adjuvant sustaining measures include keeping the patient warm, administration of oxygen and carbon dioxide, maintaining fluid and electrolyte balance, and preventing the development of pneumonia by use of anti-infectives. In deep barbiturate coma, neither the use of artificial respiration,[15] electroshock stimulation, nor analeptic drugs such as picrotoxin[3] is an easy, trouble-free procedure, and use of bemegride is no exception to the rule.

Bemegride is given as a 0.5% solution in sterile saline by continuous intravenous drip, at the rate of one drop per second or as indicated, to restore and maintain respiration and reflexes, such as the corneal reflex.[15] Respiration may be restored even in apnœa,[7] but the intravenous drip must be continued until the barbiturate has been eliminated from the body, since elimination of barbiturate is not accelerated by bemegride.[18] Convulsions may occur during the course of treatment.[13] One to four days after the patient has awakened from barbiturate stupor, a mild delirium may appear, last for two to six days and disappear without medication,[13] although chlorpromazine may help.[15] Convulsions during, and delirium after, bemegride treatment are more common in barbiturate addicts.[13]

Amiphenazole is 2:4-diamino-5-phenylthiazole,[5] a colourless, crystalline powder which is soluble to 4% in distilled water, forming a solution which decomposes on standing. Solutions for parenteral injection are made just before use, by adding 1.5 ml. of sterile distilled water to vials containing 15 mg. of the dry powder, or 20 ml. of sterile distilled water to vials containing 300 mg. of the dry powder. It is also available in tablets containing 20 mg. of the drug. After the administration of relatively large doses, amiphenazole is rather slowly eliminated from the body, and its effects may persist for two or three days.[16] From evidence available to date,[10, 16, 21-23, 25] amiphenazole may be categorized as a morphine antagonist with actions somewhat similar to those of nalorphine.[4] Amiphenazole has been reported to inhibit development of respiratory depression and other undesirable side-effects of morphine, such as constipation, vomiting, suppression of cough, miosis, stupor, and even tolerance and addiction, without appreciably affecting the analgesic action, thus permitting larger doses of morphine to be used for relief of pain. The same antagonism is apparently evident towards heroin, Omnopon, pethidine and methadone.[25] The effects of toxic doses are restlessness, muscular twitching, mental disorientation and hypertension. Amiphenazole has been used as an adjuvant to bemegride, usually in a dose of 10 to 15 mg. of amiphenazole to every 50 mg. of bemegride, in treating effects of overdosage of barbiturates.[2, 6, 9, 11, 17, 19, 26, 27] More recent evidence[16] indicates that it brightens mental attitudes in depressive states in a manner somewhat similar to that of stimulants of the caffeine and amphetamine groups.

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TO ALL OUR READERS

No doubt you will already have heard that a new surgical journal, the *Canadian Journal of Surgery,* is to appear in 1957, and will wish to know something about it. Your first question will naturally be . . . who is to be responsible for the quality of its contents? The answer is, in the first place, an editorial board consisting of the professors of surgery in all the medical faculties across Canada, with Dr. R. M. Janes, professor of surgery in the University of Toronto, as chairman of the board, and an advisory board in such subjects as gynæcology, urology, plastic surgery, etc. Secondly, quality of presentation will be assured by the publishers, the Canadian Medical Association, and in particular the editorial staff of the Association. Thirdly, and this is the most important point, high quality will be assured by the surgeons of Canada using this new journal as a medium for communication of original work to their colleagues.

Feeling certain that there is now a need for a Canadian surgical journal, the Canadian Medical Association has allocated a substantial sum of money to launch the new publication. Its continuing financial stability can only be guaranteed, however, by the willingness of all those interested in any branch of surgery to subscribe to the journal.

It should be remembered that the *Canadian Journal of Surgery,* which will appear quarterly from October 1, 1957, will contain material of interest to men in all fields of surgery including ophthalmology, otolaryngology and anæsthesia, as well as to the general practitioner whose work includes surgery. We are therefore asking you to subscribe to the first volume (four issues) of the *Canadian Journal of Surgery,* at a subscription rate of ten dollars, a figure subject to modification later in the light of experience.

R. M. JANES, Chairman of Board,
S. S. B. GILDER, Editor, C.M.A. publications,
T. C. ROUTLEY, Managing Editor, C.M.A. publications.

CANADIAN MEDICAL ASSOCIATION,
150 ST. GEORGE STREET,
TORONTO 5, ONTARIO.

I am enclosing $10.00 in payment of a subscription to the first volume (four issues) of the *Canadian Journal of Surgery,* to appear quarterly from October 1, 1957.

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Cheques should be made payable to the Canadian Medical Association.

Medical News in brief

VENA CAVAL OBSTRUCTION IN BRONCHIAL CARCINOMA

One of the most unpleasant complications of bronchial carcinoma is obstruction of the superior vena cava, which is apparently more common nowadays than in the past. In most cases there are pulmonary symptoms before the onset of obstruction, but in a small number the latter is the first indication of the presence of a lung cancer. The main complaint is dyspnœa, with a sense of fullness in the head, swelling of the neck, and puffiness of the face. Headache, vertigo and drowsiness are often present, possibly because of a rise in cerebral venous pressure. Physical signs include venous engorgement of the neck, congestion of the face with suffusion of the conjunctivæ, œdema of the face, neck and possibly arms, and evidence of a collateral circulation. Szur and Bromley *(Brit. M. J., 2*: 1273, 1956) report that in 732 patients seen at the Bronchus Tumour Clinic at Hammersmith Hospital, London, 107 had signs of superior vena caval obstruction. Radiation treatment benefited 69% of the latter group, and in four-fifths of these obstruction did not recur before death. Radiation treatment should be attempted in all patients suffering from this condition.

TREATMENT OF ACUTE ŒDEMA OF LUNG WITH CHLORPROMAZINE

Lacassie *(Presse méd.,* 64: 1837, 1956) extols the virtues of chlorpromazine in the treatment of acute œdema of the lung and in prevention of its recurrence. He injects intravenously in a dose of 50 mg. diluted down in 18 c.c. of distilled water, giving the solution at the rate of 0.5 c.c. every 45 seconds and taking the blood pressure every five minutes. When the latter has fallen by 10 mm. the injection may cease. The result has always been obtained in 20-25 minutes with a single ampoule of chlorpromazine solution. The patient falls asleep during the injection. Recurrence of acute œdema with hypertension appears to be blocked with chlorpromazine, and it is possible by intramuscular injection to abort an attack.

AN UNUSUAL EYE SIGN

Snow of Manchester, England, (*Lancet,* 1: 65, 1957) describes an unusual physical sign obtained at ophthalmoscopic examination while the eye is pressed upon to slow intraocular blood flow. The sign consists of visible sludging or clumping of the red cells in the retinal veins, and is nonspecific but usually associated with organic disease. The sign becomes obvious within five to eight seconds of beginning pressure on the eyeball through the lateral aspect of the upper eyelid with the thumb. The author noted sludging on one or more occasions in 90 patients, 79 of whom had definite organic disease (active tuberculosis in 17, carcinoma in 10, etc.), whereas it was absent in 31 healthy persons, and in 150 outpatients with a variety of illnesses, mostly minor. The sign can be found in pregnancy and to a lesser extent during menstruation. The author suggests that it is particularly useful in bringing to light unsuspected organic disease in patients with few or unconvincing symptoms.

CONGENITAL MALFORMATION DUE TO AMNIOTIC-SAC PUNCTURE

Trasler and her colleagues from McGill University *(Science,* 124: 439, 1956) warn against the practice of amniotic sac puncture for detection of sex in human beings, particularly in the early stages of pregnancy. They have demonstrated that attempts to inject substances into the amniotic sac of mouse embryos leading to amniotic fluid leakage may cause abnormalities in the fetus. Out of 14 mice in which the amniotic sac was punctured, six aborted or resorbed their litters. In the remaining eight litters, 10 out of the 17 treated embryos that survived had a cleft palate, probably due to loss of amniotic fluid constricting the embryo.

RADIOACTIVE GOLD FOR ASCITES

At the University Hospital, Columbus, Ohio, *(Surg., Gynec. & Obst.,* 103: 437, 1956) radioactive colloidal gold has been used in the treatment of ascites since 1952. Its use in 35 cases of ascites secondary to tumour is described; three of these patients received a second treatment and the majority were suffering from some type of adenocarcinoma. Most of the patients were women and in most cases the carcinoma was primary in the ovary. The dose given was 35-150 mc. diluted in 100-500 c.c. of normal saline and allowed to drip through a plastic tube inserted into the peritoneal cavity. One in every four patients had a complete remission of ascites and one in five had partial remission; thus 46% had some relief from ascites. Why the others did not respond is unknown. Because pain is relieved as well as ascites, it is suggested that radioactive gold be given at an early stage rather than a terminal one in such cases.

INTRA-ARTERIAL OXYGEN IN PERIPHERAL VASCULAR DISEASE

Marshall and Whelan *(Brit. M. J., 2*: 1448, 1956) have followed up reports from Germany and France that intra-arterial administration of oxygen is a good vasodilating agent in peripheral vascular disease. They compared results in 18 patients with those of administration intra-arterially of various vasodilator drugs. They gave 10 c.c. for the upper limb and 30 c.c. for the lower limb of oxygen over a period of 10-15 minutes. They confirm that with certain precautions the injection is safe and that the vasodilator effect is more prolonged than that of the drugs; in most cases blood flow increased for 24 hours.

(Continued on advertising page 52)

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Special Article

IN DEFENCE OF NURSING. II.

RAE CHITTICK* and MOYRA ALLEN,†
Montreal

IT IS A HOPEFUL SIGN to find a special article on nursing education in a medical journal. It has long been a grievance with nurses that the medical profession has shown little interest in the problems associated with the education of student nurses. Most doctors are concerned with the end product but are unaware of the difficulties encountered in teaching students in a hospital school where emphasis must be placed on the immediate needs of patients.

In their article entitled "In Defence of Nursing," Dr. Zerny and Dr. Osmond‡ make a sweeping condemnation of the whole field of nursing education, stating that the curriculum is crowded with boring, unwieldy and confusing rubbish. Much of what these two medical men say is true, but they show little insight into what has brought about this state of affairs, nor are they realistic or logical in their suggested methods for improvement. In the vehemence of their condemnation they make a number of very silly observations that weaken the entire presentation. The statement, "We contend that there is only one basic science of nursing and this is simply nursing," has no sense. One might as well say that there is only one basic science of medicine and that is simply medicine. It would be a sad day for patients if both the medical and nursing profession did not look to the physical, biological and social sciences for an understanding of human beings and the nature of illness. In nursing the knowledge gained from these disciplines is the basis for reporting to the doctor the "clear, accurate and concise picture of the patient" which the writers say is one of the essentials of good nursing.

In summing up their argument the authors set down in a clear, concise fashion what they consider nurses should be taught, and every nurse-educator would agree wholeheartedly with these statements. They would say that this is exactly what they are trying to achieve. But how is this to be done? One would gather from the article that the way to do this is to dispense with organized subject-matter courses and to teach entirely at the bedside of the patient. In many ways this would be ideal, for nurses recognize that the most effective teaching is done at the bedside, but this involves the freedom of the student to be taught and the availability of the staff to teach her. On the average ward, student nurses are so busy carrying out the routine demands of the hospital that it is practically impossible for the head nurse or the clinical teacher to give more than brief directions or explanations that will enable the student to complete essential duties.

Nurses have never dismissed ward experience as "merely service". They have recognized that it is the heart of the whole nursing program. They have stated this over and over, but the writers, along with Dr. Thomas Hale, Dean of Albany Medical College, whose ideas they quote, continue to make this misrepresentation. The plea of nursing educators has been for more time on the wards to teach, to develop that "keen attention to detail at the bedside, the capacity to be unhurried and unperturbed" which is so highly recommended by the authors of this special article. It has been amply demonstrated both in Canada and the United States that a better program of education for nurses can be given in less than three years if the clinical experience can be selected on an educational basis rather than on the needs of the hospital. It is the plea for the elimination of the routine service which does not contribute to the education of the student which has led to the argument that nursing educators are interested in academic courses, rather than practical experience at the bedside.

Hospitals seem unable to provide staff to allow for sufficient individual or small-group teaching in the wards. Therefore, as a matter of expediency much essential subject matter must be taught in the classroom. The result has been the superficial presentation of subject matter through a multiplicity of courses that often bear little relation to what the student is doing in the wards. It is this kind of teaching, particularly at the hands of poorly prepared teachers, that students find boring and fail to use in improving their nursing skills. A great deal more of what is now taught in the classroom could be made meaningful and effective if there were the time and the teaching staff in the wards to help the student see its implications in improving the art of nursing. What is more, hospital administrators ignore the fact that students give service over a 24-hour period and that provision should be made for the guidance of the student whenever she is in the ward.

Dr. Zerny and Dr. Osmond suggest that the soundest approach to the development of a proper curriculum is to study the work and methods of nurses recognized by patients, doctors, and their fellow-nurses as being the most competent. Nurse educators are constantly studying what is demanded of nurses and what constitutes effective nursing practice in an effort to develop curricula which will enable the student to perform these functions with skill and understanding. The nurse needs a great many technical skills. She must have an understanding

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‡This Journal, 75: 752, 1956.

of human nature and the effect of our culture on behaviour. It is this understanding that brings about the realization that when a patient vomits she may be "humiliated both with the retching and the shame". The nurse needs to learn how to observe accurately and to interpret these observations. Accurate interpretation is impossible without the knowledge of how the body reacts to disease and to certain therapeutic measures. She must learn the skills of relating to people and of management, for she is expected to assume responsibility for others in the wards. She must learn, as these writers say, "to chart accurately and to make clear, concise written reports". These are all skills that require time to learn and an infinite amount of teaching, both at the bedside and in the classroom. How can all this be done if the hospital demands so much of the student's time in carrying out numerous routine jobs essential in the care of the sick? How can it be done without well-prepared teachers? It is only teachers with a rich store of knowledge who know how to select the essential ideas from the basic sciences and who can show the student how these contribute to the understanding of the needs of patients. It is to prepare teachers with wisdom that educators have set up the five-year college program decried by the two doctors mentioned. At no time have educators contended that such a program was for all nurses. Teachers, supervisors and administrators need breadth of knowledge if they are to work effectively with others. It is out of such a rich background that Florence Nightingale was able to see the essentials in nursing so clearly and to guide her students so effectively.

In our desire to prepare nurses to meet the needs of patients, we are apt to forget that these young people have certain rights as students. One right is to develop their own potentialities, which involves time to read, to discuss and to reflect on materials and situations in the hospital as well as in the community and the world in general. Students need time to take part in the cultural activities of the community in order to understand themselves as well as the world in which they live. The road to good nursing involves much more than hospital instruction and frequently the opportunities for personal development found outside the hospital have a more cogent effect on nursing than the best bedside teaching.

Since hospitals are assuming the responsibility for preparing nurses for the community, the curriculum must include much more than bedside nursing in a hospital. It is unfair to assume that all the students who enrol in a hospital school expect to remain in the hospital to do bedside nursing when there are many other avenues of employment open to the graduate nurse in the community. In conducting a school the hospital has a responsibility to prepare the student for community nursing in its broadest aspects. This involves the development of an awareness of community needs and the role the nurse can play in meeting these needs. If hospitals feel that this broader approach is not their concern, they should encourage the establishment of schools of nursing which are independent of hospitals. It was the independent school that Miss Nightingale worked to establish, for she foresaw the dangers involved when hospitals controlled the education of nurses. In establishing the school at St. Thomas's Hospital in London, she laid down three specifications. The first placed the control of the school outside hospital jurisdiction; the second provided funds for the operation of the school program and placed the administration of these funds in the hands of a group responsible for the school; and the third required that staff nurses should be available to care for patients.

Hospitals of necessity are more concerned with the care of patients than with the education of students. It is this dichotomy of interests that has not been resolved even in the best hospital schools of nursing.

PUBLIC RELATIONS FORUM

Conducted by L. W. HOLMES,
Assistant Secretary, C.M.A.

PREVENTIVE PR

ALL TOO FREQUENTLY a public relations program is viewed as only a therapeutic instrument to cure an illness of public attitude. It is true that many activities in a PR program are remedial, designed to placate an irate public and convert unfavourable opinion into favourable. But to so limit the horizon of PR planning is to weaken the effectiveness of the program.

The practice of public relations, like that of medicine, should emphasize prevention, preserving the health of public attitude by precluding any sources of misunderstanding or conflict. Surely the old adage "an ounce of prevention . . ." can be applied with meaning in the field of public relations.

And yet, public relations as practised by the medical profession does not always demonstrate belief in this basic concept. Many of our public relations programs have been founded in times of unhappy belligerent public attitudes, and activities added from time to time are prompted by shifting complaints rather than in an anticipation of unfavourable public opinion.

Under pressure of public complaints—brought to the attention of all in the columns of the press—many medical societies have set up some system by which medical services may be obtained at any time of day or night. It is a

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certainty that such developments have brought about a desirable shift in public attitudes.

But assuming that unfavourable opinions have been shifted to the favourable page of the ledger, there is no guarantee that they will remain there. Memories are short; newcomers to the community may know nothing about the Emergency Call System.

The Emergency Call System established and publicized a year or two ago must be republicized to be effective in its dual purpose: meeting public criticism through service. Newcomers must be made aware that such systems exist, and persons longer resident must be reminded.

A frequent argument against publicizing the local system is that it will be abused by cranks. Experience in American communities, several hundred of which have had Emergency Call Systems for a number of years, prove these fears groundless. But even should this argument be sound, surely the public relations gain in criticism warded off and incidental good favour from a job well done more than offset the annoyance of a few crank calls.

Most existing Call Systems are publicized through a small advertisement in the yellow pages of the local telephone directory. This is essential but insufficient. Few persons have occasion to consult the "Physicians and Surgeons" listings of their telephone book until an emergency arises, and then the individual frantically seeking a doctor will probably miss a small boxed ad. in the corner of the page.

The telephone directory ad. should be supplemented by other publicity methods. Firstly, if local telephone officials are responsive to the idea, the number should be listed with other emergency numbers in the front of the directory.

Attention of the public should be called to the Call System periodically through other media. The newspaper advertisement and the feature stories are ideal for this purpose. The latter costs nothing and lends itself to many treatments. Each year a report of services rendered may interest the City Editor. A perfect "news peg" is the unusual case, e.g., where the system can be credited with a life saved.

The local medical society might also provide its members with inexpensive literature for distribution to patients describing the local emergency system. This might be a gummed label for insertion in the telephone book or mounting near the telephone.

Announcements can be distributed to the police, druggists, the fire department, and hospitals, and pasted near public telephones.

Radio and television spot announcements can be used.

This, then, is preventive public relations at work, warding off those unpleasant complaints which label the medical profession as a cold, inhuman group of individuals, interested in only their own welfare. But, while practising prevention the profession stands to gain something more than absence of criticism. It reveals itself as being interested in the welfare of the community and its citizens. And telling the public, within the bounds of good ethics, of course, about one's community spirit is sound public relations.

After all, "virtue will not win its own rewards."

VOICE OF THE PUBLIC PRESS

For Federal Medicine.—Compulsory national health insurance received the support of a labour leader, economist and a political party chief in a panel discussion in Montreal. A doctor opposed it on the grounds of lowered medical standards. The labour leader, A. Andras, assistant research director, Canadian Labor Congress, said the scheme would provide uniform service to all income brackets. J. Perrault, vice-president of the national CCF party, said one-half of the people of Canada are not properly cared for and "are sadly lacking in medical care". The economist, R. B. MacPherson, supported such a plan to protect Canada's greatest asset, a healthy vigorous people. Expansion of hospitals and extension of proper medical care to all income groups with emphasis on the hardship and calamity cases were necessary, he said. The doctor, G. W. Halpenny, secretary of the Quebec Division of the C.M.A., pointed out that one-half of the population were adequately cared for by voluntary insurance. In countries where compulsory schemes have been established standards of medicine have dropped because there were not sufficient facilities for all. *(Montreal Star)*

* * *

PC Plank.—Hospital insurance and health costs found a prominent place in the Progressive Conservative party platform adopted at the party's national convention in Ottawa. "As outlined, it would allow all present hospital insurance premiums to be wholly deductible from taxable income and would provide more generous income tax deductions for medical expenses. At present, deductions are allowed for payments in excess of 3% of taxable income.

"The health proposal also promises to negotiate with individual provinces for a comprehensive hospital insurance plan, covering all types of ailments including tuberculosis, insanity and diseases of the aged. The plan would go into effect immediately between any province agreeing to it and the federal government.

"Existing private insurance plans, such as Blue Cross, and provincial schemes would be used, and the 'remainder of the cost' shared by the federal and provincial governments 'according to mutually acceptable financial arrangements'." *(Ottawa Citizen)*

FUTURE C.M.A. MEETINGS

1957 Edmonton	June 17 - 21
1958 Halifax	June 15 - 19
1959 Edinburgh (Conjoint meeting with B.M.A.)	July 16 - 24
1960 Banff	June 13 - 18

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GENERAL PRACTICE

ULCERATIVE COLITIS*

LAURENCE S. FALLIS, M.D., F.R.C.S., F.A.C.S.,† *Detroit, Mich.*

THE EXACT CAUSE of ulcerative colitis is unknown. Infection, allergic reaction and emotional disturbance[1] play a part in the production of the disease, although their precise role has not been determined.

CLINICAL COURSE

The course of ulcerative colitis is chronic with recurring acute exacerbations in approximately 95% of the cases. The acute fulminating type is encountered in only 5% of the patients suffering from this disease.

The clinical manifestations of the chronic case in brief are: frequent bowel movements, often blood stained; slight fever; malaise; anæmia; loss of weight, etc. The diarrhœa is notably resistant to the usual remedies. Patients often are able to maintain their usual activities for years in spite of these symptoms until finally an acute exacerbation of the disease brings them to seek hospital admission. The onset of these acute episodes often follows severe upper respiratory infection or an emotional conflict. The acute phase, though variable in duration and severity, often is self-limiting in the sense that response to treatment is good.

A small group of cases, comprising less than 5% of the total, do not yield to treatment and pass on into the acute fulminating type, going downhill rapidly in spite of supportive measures. In certain patients the onset of the disease is explosive in character. The unfortunate victim passes from apparent health to a dangerously ill condition in a matter of days or even hours. Serious intestinal bleeding may be the outstanding symptom and a severe emotional upset is often the trigger mechanism at least, if not the etiological factor in the attack.

COMPLICATIONS

1. *Fulminating cases.*—The complications of the acute fulminating type are dramatic and consist of exsanguinating hæmorrhage and perforation, both of which require immediate surgical intervention. Also sodium, potassium and chloride depletion to a lethal level may occur so rapidly that even heroic efforts at replacement are fruitless.

2. *Chronic cases.*—It is convenient to consider the complications of the chronic cases under two headings: local and systemic. Pseudopolyposis, internal fistulas, obstruction of the colon, persistent perianal infection and carcinoma are the commonest of the local complications. Carcinoma, which arises in about 5% of patients, is the most serious. Only a small percentage of patients who develop cancer are cured even by radical extirpation, since in most instances the disease is well advanced before it is recognized, the reason being that the classic symptoms of bleeding and diarrhœa are attributed to exacerbation of the original disease rather than to the development of neoplastic growth. Treatment-resistant anal ulcers, ischio-rectal abscesses and fistulæ-in-ano often present the only clue to diagnosis of early relatively symptom-free stages of the disease or to those equally baffling examples of occult or segmental varieties.

The systemic complications are due to toxic absorption from the ulcerated colon and produce, as outlined in Table I, a bizarre group

TABLE I—COMPLICATIONS IN CHRONIC CASES

A. Local
1. Pseudopolyposis
2. Internal fistula
3. Obstruction of colon
4. Persistent perianal infection
5. Carcinoma

B. Systemic
1. Infantilism
2. Clubbed fingers
3. Joint involvement
4. Dermatitis
5. Iritis
6. Hepatitis
7. Cirrhosis of the liver
8. Liver abscess
9. Fatty liver
10. Decalcification of bone
11. Renal calculi
12. Avitaminosis

of symptoms ranging from infantilism to avitaminosis. Included in this group are such apparently unrelated conditions as clubbed fingers, joint involvement, dermatitis and iritis. The effect on the liver is manifested by hepatitis, cirrhosis, fatty liver and liver abscess. Mobilization of calcium may produce renal calculi.

The development of complications draws attention to the serious nature of the disease and emphasizes the necessity of extirpation of the diseased colon.

PATHOLOGY

The pathological process begins as œdema and pin-point erosion of the mucosa progressing to frank ulceration with areas of mucosal denudation. The ulcers may actually penetrate the bowel wall, with generalized peritonitis or localized abscess ensuing. These abscesses may

*Presented at the Annual Meeting, Canadian Medical Association, Quebec, June 15, 1956.

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rupture externally with the formation of an external fistula or internally with the formation of an internal fistula communicating with any of the hollow viscera. The deeper layers of the intestinal wall become involved, and with the development of fibrosis, which usually involves the mesentery, the characteristic roentgen findings of narrowing and foreshortening are produced. A combination of healing and contraction gives a pebbled appearance to the uninvolved mucosa and these areas in more advanced cases look like polyps, the so-called pseudopolyposis. Overgrowth of these mucosal areas may produce actual polyps which in approximately 5% of cases go on to malignant degeneration.

X-RAY FINDINGS

The early x-ray findings are localized spasm and distortion of the mucosal pattern. As the disease progresses, fibrosis of the intestinal wall leads to loss of haustral markings, narrowed lumen and tube formation of the colon. Secondary involvement of the mesentery is manifested roentgenologically by the characteristic foreshortening of the transverse and sigmoid colon and depression of the flexures.

DIAGNOSIS

The diagnosis is made on the basis of the history of blood-stained diarrhœa, the sigmoidoscopic evidence of mucosal ulceration of the colon and the barium enema findings. The diagnosis is usually not difficult, since the disease begins in the rectum in at least 85% of the patients and is therefore accessible to proctoscopic examination. The main diagnostic problems have to do with the segmental type of the disease, especially when it is limited to the loop of the sigmoid beyond the reach of the sigmoidoscope, and where radiographic confirmation is difficult to obtain. The chronic dysenteries, regional enteritis and lymphogranuloma venereum have been confused with ulcerative colitis. Familial multiple polyposis has to be differentiated from pseudopolyposis. Diverticulitis and carcinoma also enter the differential diagnostic field.

TREATMENT

Until the etiology is determined there can be, of course, no specific treatment. Medical management is directed toward supportive measures, of which maintenance of nutrition occupies a prominent place. Forced tube feeding with homogenized natural foods[2] in our experience has proven to be of great value, both as a stabilizing factor in the treatment of the acute phase of the disease and in the preparation of patients for operation. The different types of therapy recommended are listed in Table II.

TABLE II—TREATMENT

1. Nutrition
2. Sedation
3. Antibiotics
4. Sulfonamides
5. Vaccines
6. Psychiatry
7. ACTH
8. Vitamins
9. Transfusions

It is extremely difficult to assess the value of any form of treatment because the disease runs its course subject to remission and exacerbation. Adrenocorticotrophin (ACTH) has produced dramatic results in some fulminating cases and has apparently arrested the disease temporarily, but when recurrence takes place the repeat administration of ACTH has too often proven to be ineffective.

The real problem in the management of these patients is—when to advise surgical intervention? In the chronic cases with acute exacerbations the answer is not too difficult. Here the onset of any of the complications outlined in Table I provides sufficient evidence to indicate that the diseased colon is not only of little functional value to the patient but actually is a menace to health.[3a, 3b] Therefore, total colectomy and ileostomy should be advised when the patient's condition has been stabilized. The chief difficulty arises when dealing with fulminating cases of the disease. The indications for operation are clear-cut when perforation or exsanguinating hæmorrhage complicates the picture, but when the patient is resistant to all form of therapy and is literally dying under the watchful care of his physician the decision to recommend operation is an entirely different matter. Emergency ileostomy performed under local anæsthesia is at times apparently life-saving and at other times appears to have no effect on the downhill course of the disease. Ileostomy alone should always be considered only as the first step of a plan which ultimately culminates in the removal of the entire colon and rectum. Furthermore, ileostomy performed in this type of patient carries with it a mortality of from 25 to 40%. It is little wonder therefore that physicians often elect to continue with nonoperative treatment, for all those with other than a limited experience with ulcerative colitis have observed dramatic improvement in patients who have refused operation. There is perhaps no other disease from which a patient can recover after reaching such an apparently irreversible point of depletion. Some surgeons of eminence[4] advocate and practise with success ileostomy and sub-total colectomy even in the very acute and apparently hopeless cases. The rectum and remaining colon are removed at a later date. They submit, logically enough, that the cure of the condition lies in removing

the cause. The one-stage operation undoubtedly is the ideal approach, but there are always situations in which graded procedures are advisable. At the Henry Ford Hospital it is our practice to get the patient in a stable condition if possible by medical measures. Then after correcting the nutritional deficiencies by tube feeding with natural whole food[2] we proceed to perform a one-stage operation—proctocolectomy with permanent ileostomy. This procedure has been carried out on 29 consecutive patients with only one death. One has only to view the functionless grossly infected removed colon to be convinced of the soundness of the procedure. The end results are excellent—young men who were unable to work now are leading normal useful lives, and young women previously condemned to chronic invalidism are now married and raising families.

The fly in the ointment is the morbidity of the operation. Turnbull[5] and Brooke[6] have made notable contributions towards lessening the complications of ileostomy, but prolapse and contraction of the openings still plague the surgeon. Also postoperative adhesions causing recurring attacks of obstruction are still an unsolved problem. Nevertheless, until the etiology of ulcerative colitis is known and effective specific treatment given in the earlier stages, submission to surgery is the only recourse for the unfortunate victim of this disease.

SUMMARY AND CONCLUSIONS

1. The etiology of ulcerative colitis is unknown.

2. Emotional disturbance plays a part in the production of the disease.

3. The treatment of the disease is essentially medical. Surgical intervention is indicated when complications arise.

4. The value of restoring nutritional balance by tube feeding in both the medical management and in preparation for operation is emphasized.

5. The surgical trend is towards one-stage operations.

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NEUROSES IN GENERAL PRACTICE

IN NOVEMBER 1955 a well-known general practitioner, Dr. C. A. H. Watts, gave the second John Matheson Shaw Lecture of the Royal College of Physicians in Edinburgh. He spoke about the neuroses in general practice, and his lecture is now available as a publication of the Royal College of Physicians. His talk dealt with two particular points: (1) the incidence of psychiatric disorders in general practice; (2) the reasons why the average general practitioner and non-psychiatric specialist has such a distaste for the neurotic.

He discussed the figures given by various authors since the war for the incidence of psychiatric cases in general practice, and pointed out that figures varied greatly because of confusions of terminology. Thus, stress disorders might be divided into psychiatric disease and psychosomatic conditions; the former would consist of the neuroses and psychoses, while the latter contain such conditions as peptic ulcer, asthma and dysmenorrhœa. So far as can be ascertained from some ten surveys of statistics of stress disorders in general practice, these made up a little under one-third of the general practitioner's case load; about 20% were psychosomatic cases, and about 10% psychiatric cases.

Dr. Watts had analyzed his figures for new psychiatric cases seen over a period of seven years, and concluded that two-thirds of the psychiatric cases seen in general practice are neuroses and that most of these can be treated by the general practitioner. One in every 17 patients seen by the family doctor is suffering from a neurosis, so that under the heavy conditions of English practice, the family doctor sees about two to four neurotics every day. Dr. Watts considered that the indifference of the average practitioner to the real needs of the neurotic is a serious defect in our system of medicine. Confronted with a neurotic, general practitioners tend to suffer from three misconceptions: (1) that the patient is a very troublesome fellow and to be avoided as far as possible; (2) that psychotherapy requires skill and experience beyond the scope of the G.P.; (3) that psychotherapy is too time-consuming to be possible in general practice.

Dr. Watts then pointed out the comparative ease with which the acute neurotic, who is a very likable fellow, could be treated satisfactorily. Once a general practitioner had learned to sort out these people, he would begin to enjoy psychotherapy. Dr. Watts noted that, from his own records, he could show a recovery rate on a long-term follow-up of about 50%, and a great improvement in another 28% of neuroses.

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Dr. Watts suggested that whereas the old-fashioned family doctor gave a great deal of moral support to his patient, the coming of so many useful physical weapons had rendered the modern doctor too dependent on them, so that he had tended to ignore the usefulness of rapport. He divided psychotherapy into three grades: (1) building up a strong rapport between the patient and doctor; (2) the reasoned process with intent to restore the patient's self-confidence; (3) the deep therapy which is the province of the specialist. In ten years Dr. Watt had discovered only one case in his practice which required deep analysis. The average acute neurosis could be dealt with in some three hours. Three things were essential for such treatment: an interest in people, a listening ear, and patience.

COLLEGE OF GENERAL PRACTICE CONVENTION

A SCIENTIFIC CONVENTION, planned precisely for the Canadian general practitioner, has been arranged by the College of General Practice of Canada for March 4, 5 and 6.

Thirty scientific exhibits, nearly twice that many technical exhibits, and some 30 of the continent's top medical authorities have been confirmed for this scientific convention of the College. The business and scientific sessions—to be held at the Sheraton-Mount Royal in Montreal—will be completely bilingual. They are to be simultaneously translated into English or French.

The executive and board of representatives of the College will meet on March 2 and 3, with some standing committees meeting on the latter date. The College will hold its general business meeting on March 4 and the annual dinner on the following night. The printed program covering the convention activities and exhibits will go forward to College members about February 1. Copies will be available to others on request. All general practitioners will be welcome at the convention.

Scientific exhibits will show the latest techniques of blood transfusion, plaster-cast and bandaging methods; the application of atomic radiations to general medicine will be shown by Atomic Energy of Canada Limited and there will be a display on radiation hazards by the Department of National Health and Welfare. Dr. W. A. Lange, Detroit plastic surgeon, is bringing a realistic exhibit of coloured photographs of facial plastic surgery; Drs. Leo and Maurice Croll, from the same city, will demonstrate common eye injuries and diseases, and their treatment. The value of combined inoculations at birth will be demonstrated by Dr. H. D. Chamberlain, of McArthur, Ohio. Dr. Antoine Nahoum, of Detroit's Alexander Blain Hospital, is bringing an exhibit on cancer of the prostate.

Dr. G. J. Sarwer-Foner, psychiatry consultant at the Queen Mary Veterans Hospital, Montreal, has arranged an exhibit on three tranquillizing drugs, while a colleague, Dr. Mitchell, has prepared an exhibit to show skin diseases as evidence of constitutional disorder. The medical department of Mead Johnson and Company plan an exhibit on body fluids in clinical practice; John Wyeth and Brother (Canada) Limited have an exhibit to show oral treatment with penicillin for subacute bacterial endocarditis.

Institutional exhibits planned for the general practitioners include a scientific exhibit on epilepsy by the Montreal Neurological Institute; wringer injuries sustained by children, to be displayed by the University of Manitoba; and an exhibit dealing with diagnosis and treatment of tuberculosis by the general physician. The University of Saskatchewan will display a graphic comparison of three agents to dry salivary secretions. Various aspects of a public health program will be shown by the Montreal Department of Health. The Canadian Mental Health Association will provide an exhibit on diagnosis and treatment of depressive conditions. And there will be an exhibit by the Canadian Arthritis and Rheumatism Society covering 200 clinical and pathological slides which are available for teaching.

The Metropolitan Life Insurance Company is showing its exhibit on perinatal mortality statistics. Dr. R. A. Davison, of the University of Tennessee, will demonstrate how a department of general practice may function in a medical college. There will be both English and French showings of a half-hour film on the diagnosis and treatment of allergies, to be presented during exhibit hours.

Some 55 technical exhibits planned for the College of General Practice convention will represent virtually every type of drug therapy and equipment available to the general practitioner. Both technical and scientific exhibits will be open during the three convention dates, March 4 to 6.

A feature of this first scientific meeting planned especially for the G.P. will be a clinic to provide the doctors themselves with check-up examinations. Wives of visiting delegates will find extensive activities arranged for them during the convention. These are to include a fur fashion show, a visit to Montreal's botanical gardens, and a tour of the St. Lawrence Seaway project.

In addition to the medical men who are bringing scientific exhibits, 18 speakers and three panels will participate in the General Practice scientific sessions. These speakers will include such authorities as Dr. R. J. Jackman of the Mayo Clinic; Dr. Hans Selye of the University of Montreal; Dr. Paul David, director of the Montreal Cardiological Institute; Dr. H. Medovy of the University of Manitoba; Dr. A. B. Stokes, professor of psychiatry at the University of Toronto; Dr. R. Ian Macdonald, also of the University of Toronto; Dr. J. Lewis Dill of Henry Ford Hospital, Detroit; Dr. Arthur C. Curtis, of the University of Michigan; Dr. H. B. Atlee, professor of obstetrics, Dalhousie University; Dr. H. L. Nadeau, professor of dietetics, and Dr. Richard Lessard, professor of pathology, Laval University; Dr. Oswald Hall of the University of Toronto's political economy department, who will talk on "Is Your Patient With You or Against You?"; and Col. K. R. Swinton, general manager of the Thomas A. Edison of Canada Company, who will speak on business methods as applied to the general practitioners' offices.

Three panel discussions are scheduled to deal respectively with diabetes, ataractic drugs, and the use of sera and vaccines. Dr. Lillian Chase of Toronto will chair the panel on diabetes, with Dr. H. S. Everett of St. Stephen's, N.B., and Dr. Gordon D. Brown of Edmonton participating. The panel on ataractic drugs will be

chaired by Dr. Sarwer-Foner, with Dr. H. E. Lehmann of McGill University and Dr. Lennox Bell of the University of Manitoba as panel members. The vaccine panel will be under the chairmanship of Dr. Henri Charbonneau, medical director of l'Hôpital Pasteur, Montreal. Dr. Paul G. Weil of the Royal Victoria Hospital will lead a four-man team, each member of which will give a six-minute talk dealing respectively with recent advances in the treatment of hæmorrhage, allergy, poisoning and cardio-respiratory disease.

The three luncheon meetings, March 4, 5 and 6, will be addressed respectively by the Honourable Paul Martin, Minister of National Health and Welfare; Dr. Jean Charbonneau of Montreal; and Dr. John S. DeTar, president of the American Academy of General Practice. Dr. Ian Grant, president of the British College of General Practitioners, and a representative of the French general practitioners' organization will also attend the Canadian meeting.

MEDICO-LEGAL

DEATH FROM INCOMPATIBLE BLOOD TRANSFUSIONS

T. L. FISHER, M.D.,* *Ottawa*

IN MARCH 1953, a 35-year-old woman, the mother of a nine-year-old boy, who herself knew and whose husband knew she was Rh negative and who knew also that there had been Rh antibodies in her blood in a titre of 1:256, consulted her doctor because of symptoms which suggested gall-bladder disease. Investigation revealed the presence of gallstones and her doctor advised their removal. A few days later, after she and her husband had considered the advice, she decided to have the surgery done. The patient was told when the operation would be done and was told to present herself to the hospital the day before the operation so that her blood could be tested in case a transfusion were necessary. The patient attended the hospital one morning and had her blood taken for grouping and returned that afternoon to be admitted.

Later it was said that the patient had informed the doctor she was Rh negative, though the doctor's memory was that the subject had never been mentioned. His recollection was supported by the absence of an entry in the place provided in his case record to note such information and by the fact that, at the time the patient's history was being taken, there was no reason why the doctor should have enquired about the patient's Rh blood group; so the doctor was sure the subject had not been mentioned.

The operation was done, as planned, the morning after admission and though blood loss was not excessive it was thought wise to give a transfusion of 500 ml. On the first postoperative day the surgeon noted fever and scanty urinary output. On the assumption that the patient was having a transfusion reaction, appropriate treatment was begun immediately. The husband was notified of the presumptive diagnosis and only then did the surgeon learn that both the woman and her husband knew she was Rh negative.

A review of the laboratory reports showed that the laboratory technician had reported the blood to be type A, Rh positive. As no type A blood had been available, type O, Rh positive blood was cross-matched with the patient's and the technician had reported the cross-match satisfactory. The 500 ml. transfusion which the patient received was of this type O, Rh positive blood. Because the patient was having a transfusion reaction, the laboratory results were checked promptly. The various tests, using the same testing serum, were repeated not only by the technician who had done the original work but, as well, by her associate in the same laboratory. Both reported the patient's blood to be type A, Rh positive. This second set of tests emptied the bottle of all the testing serum which had been used for the first tests. There was, however, another bottle of testing serum from the same lot, bearing the same lot number, and this, with some of the patient's blood, was sent to two other laboratories where the grouping was repeated. Both these laboratories reported the patient's blood to be Rh negative.

There having been little improvement in her clinical condition over the next ten days, the patient was flown to a larger hospital from the small hospital in which the operation had been done. Her chemical status improved; diuresis occurred, profuse enough to demand electrolyte replacement therapy, but the patient died 12 days later. Autopsy showed massive liver necrosis as well as hæmoglobinuric nephrosis.

Seven months later a writ was issued claiming damages on the grounds, among other things, that the doctor had not acted on the information given by the patient that she was Rh negative and that the blood grouping and cross-matching had been negligently and unskilfully performed.

The technician who had done the grouping and the cross-matching was an employee not of the hospital but of a group of doctors, of which the surgeon was one, and the doctors' solicitor felt that quite surely responsibility for her alleged error would rest on the doctors' shoulders. The solicitor felt, further, that there was no possibility of defending the doctors successfully and advised that an attempt be made to reach a settlement.

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*Secretary-Treasurer, Canadian Medical Protective Association.

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The first figure mentioned was $25,000 and when it was made clear that such an amount would not be considered, $20,000 was named as the smallest amount that would be accepted. Careful negotiation, however, finally resulted in a settlement being reached for $11,950. This amount, with legal fees of $2,225, made the total cost $14,175.

MEDICAL SOCIETIES

MONTREAL MEDICO-CHIRURGICAL SOCIETY

Dr. W. J. McNally gave the Presidential Address at the Annual Meeting of the Montreal Medico-Chirurgical Society on May 18, 1956. His address was entitled "Musings about a good doctor." The major portion of the address is reprinted below, since it is of considerably more than local interest.

Dr. McNally said:

"We often hear the expression that so-and-so is a great doctor. That title may apply to a specialist in a large city or to a practitioner in a country district or to a doctor who has acquired fame through his teachings, writings or researches. Naturally, there is no single yardstick by which they can all be measured, because to some extent they are in different fields. There is no single criterion by which to judge the success of a doctor. The size of the practice is not dependable, because all of us know examples in which the biggest practice went with a bedside manner and very little knowledge. At the same time, we know of great knowledge which never resulted in a big practice. We also know that the so-called best student, or examination passer, does not always make the best doctor. We know teachers who were popular because of their dogmatic and well-classified pronouncements, but whose practice of medicine has left much to be desired.

"What qualities do we look for in choosing our own doctor? I think it is fair to say that sound common sense and good judgment are a 'must'. We want him to have a good fundamental training in basic principles and to have special training in the field in which he practises. He should be careful and thorough in his examination of the patient.

"The doctor who teaches, writes or carries on research has additional opportunities to keep abreast of knowledge in his field. The medical world is ever changing and there is no respite.

"At the World Conference on Medical Education held in London in August 1953, it was pointed out that medical education should be regarded as a university discipline and not as a vocational training. Curtailing the classical training of the doctor has altered his professional outlook and has lowered the public esteem in which he was formerly held. Pickering[1] stressed the difference between instruction and education. He pointed out that to instruct is simply to furnish an individual with knowledge and information, and he stated that this last form of teaching has taken over many of our medical training programs. Education should train the mind to seek its material from original sources and should train it to weigh the pertinent evidence. Pickering stated further: 'A well-educated man is not only a man of knowledge but he is one who can clearly define a problem, collect the relative facts, evaluate what may seem to be contradictory evidence and arrive at a correct judgment of the problem.'

"The doctor should be in a position to reassess much of what has been written, and in order to do this he must be trained in observation and deduction. He must be able to assess the real from the apparent causative factors. He must be able to weigh and check every phase of a problem in an unbiased manner. His own theory should be finally accepted only after an honest effort has been made to disprove it.

"As a result of more widespread research training there may develop outstanding investigators in the basic sciences or in the clinical aspects of our specialties. But what is more important is that a research training should tend to give us clinicians of greater stature.

"Sir Frederic Bartlett[2] defined experimental thinking as 'the proper weighing of similarities and differences.' He stated, 'Differences are striking, but what is more important is the discovery of significant similarities.' These are most likely to be found by studying the same phenomenon simultaneously from two different aspects.

"Sir Francis Walshe[3] stated that some of the greatest contributions to medicine had been made by clinical investigations carried out by such men as Hughlings Jackson. Walshe considers these men geniuses because they combined accurate observation with conceptual thinking. Great discoveries are made not alone by the recording of data; of even greater importance is the capacity to discover the underlying principle involved. This latter is Walshe's conceptual thinking. Walshe pointed out that in clinical investigation nature sets up the experiment; she provides the stimulus, simple or complex; she chooses the area or areas to be stimulated. The signs produced may be the result of stimulation or destruction. Each yields different types of evidence which, if properly analyzed, may be mutually supporting. The accuracy of the observation and shrewdness of deduction will determine the stature of the investigator and the value of the investigation. They separate the scientist from the technician. Clinical and experimental investigation may go hand in hand.

"A leading article in the *Brtitsh Medical Journal* of September 3, 1949 (page 520), includes the following: 'The training in scientific method, whilst providing the student with capacity for logical, impersonal, objective thought, should add point to the skill with which he applies his treatment and to the understanding and fellow-feeling that soften his conversation with his patient.'

"We are not in the habit of thinking of good clinicians as scientists, and yet that is just what a good clinician is. The diagnostician must elicit the symp-

toms, correlate them with the history, observe the signs and weigh the laboratory evidence before he can establish the diagnosis and institute the correct treatment. He has a threefold duty, to practise, to teach and to contribute new facts from his personal experience. It is when confronted by one of the large number of illnesses for which there is no established cause or effective remedy that there is a challenge for each of us to make our contribution to medical knowledge. Someone has said that medical knowledge has reached great peaks but that there are still some dark and deep valleys. With more clinicians trained in methods of investigation, it is to be hoped that the valleys will be raised up and even turned into shining mountains of achievement. Since each of us must spend his life working in a field where there is still so much unknown, one should dare to hope that he may add even a grain of truth.

"The wise doctor has some outside diversions in order to protect his own health, but even his diversions and hobbies have to be controlled, lest a hobby become so important as to invade his study time or even to encroach upon his medical duties. There are few if any other professions where one becomes so engulfed. No one has ever found the formula for doing just a nice practice. It is an all-or-nothing affair.

"The doctor has a duty towards his wife and family. They deserve a share of his time and attention. He should allocate some of each day to them. Not long ago, I operated upon a successful doctor's child. The child was asked something about his daddy, and he said, 'My daddy is no good, he reads too much.' You can see the child being told 'don't bother daddy, don't you see he is reading?' There is a lesson here which each one of us may take home.

"Do we look for anything more in our own doctor? Even though we may not realize it, our choice has been influenced by his personality and character. Is he kind and sympathetic? Is he interested in our troubles? Is he tolerant of our weaknesses? If he has these attributes, they outweigh greater knowledge in another who may be cynical or who displays a lack of interest.

"Our doctor should be a temperate man, observing 'moderation in all things'. He should be humble and simple, carrying his honours and achievements lightly. He should shun vainglory and avoid self-advertising. Thomas Aquinas has said that 'talent is not a mere personal favour, but a social responsibility.' 'Superiority is not a title to service but a commission of serious responsibility.' 'Inferior beings are led to God by superior ones,' according to Dionysius.

"Does the doctor have need for self-discipline and mortification? Should he be able to say 'no' to himself? Should he be able to accept deserved criticism? He should not allow mistakes to crush him; rather, he should profit by them. He should reduce their likelihood by further study. He should be able to school himself to accept and do well the routine and drudgery of the day, do it for God's sake. Do all the little things well. He should refuse to be rushed and stampeded. An infallible sign of being too busy is when one's examinations are not as thorough as they were.

"Does the doctor have reason to be cheerful and kind at all times, or might he occasionally be expected to be intolerent and short-tempered? He is frequently overworked and overtired. His best efforts are many times followed by failure. Is he entitled to feelings of frustration, disappointment and discouragement? Has he any recourse when such feelings do overwhelm him? Should he resort to prayer? Should he be a religious man?

"Does any other group of people in the world, not excepting the clergymen, come into closer co-operation with God and His handiwork? The hand of God goes before the doctor throughout his whole day. How often does he get good results out of all proportions to his treatment? How dependent is he upon the healing powers of his patients—and whence are these, if not from God?"

Dr. McNally went on to develop the theme of the physician's need for a religious philosophy, which he should apply to his work. He stressed the value of prayer in dealing with problems, and of courtesy to patients, any of whom should be regarded as coming to the physician "with a letter of introduction from the Lord". After mentioning the virtue of humility in medicine, Dr. McNally suggested a spiritual rather than a material index to success in practice.

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CANADIAN DIABETIC ASSOCIATION

On Saturday evening, November 24, the Canadian Diabetic Association held its Annual General Meeting at the Hospital for Sick Children, Toronto. The National President, Mrs. Merrill D. Muttart of Edmonton, was in the chair.

At this meeting, the officers of the Association for the coming year were elected: Dr. Charles H. Best, Honorary President; Mrs. Merrill D. Muttart, National President; Mr. J. Gordon Coburn, Honorary Treasurer; Mr. George Collins-Williams, Honorary Solicitor; Dr. William R. Feasby, Executive Medical Director. Directors: Mr. John D. Murray (Toronto), Mr. Gordon Currie (Ottawa), Mr. W. W. Seccombe (Toronto), Dr. Albert M. Fisher (Toronto), Mrs. J. McG. Stewart (Halifax), Dr. R. E. Washburn (Saint John, N.B.), Dr. D. R. Wilson (Edmonton), Mr. Thomas Lawson (London), Dr. J. C. Rathbun (London), Mr. H. F. G. Cleland (Toronto), Mr. Hartley Holmes (Toronto), Dr. I. E. L. H. Rusted (St. John's, Nfld.), Dr. O. H. Curtis (Charlottetown, P.E.I.), Mr. Basil Tippet (Toronto), Dr. Lillian Chase (Toronto), Miss I. Lockerbie (Toronto).

Dr. Charles H. Best extended the greetings of the International Diabetes Federation to those present, and introduced the speaker of the evening, Dr. Elliott P. Joslin of Boston, who gave a most interesting lecture on the care of diabetes, and on the origin of the Joslin Medal, which he established.

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Association Notes

ONTARIO CHAMBER OF COMMERCE AND HEALTH INSURANCE

The Ontario Chamber of Commerce has submitted a brief to the Government of Ontario on national health insurance, which contains many interesting points. In a preamble the brief outlines the problem, strongly supporting the objective of insuring hospital care for everyone who needs it without regard to ability to pay. The Chamber points out that today in Ontario voluntary prepayment and insurance plans cover 71% of the population and the percentage is increasing each year. Those not covered include indigents, uninsurables, insurable groups who have not attempted to take out insurance, and those hit by catastrophic illness in which the plans do not cover the long-term hospital costs. The Chamber considers that the efforts of government, private agencies and free enterprise should concentrate on these problem areas.

The Chamber opposes a universal hospital plan on various grounds.

1. *The cost to the individual taxpayer of providing hospital care for himself and his family under a universal plan would be greatly increased.*

This view is based on the probability that the costs of such a government-sponsored enterprise would increase beyond the limits which would be tolerated by a similar plan operated under private enterprise.

The possibility of over-staffing and reduced incentives for economy are very real hazards.

It is considered that in a matter as personal and as fraught with emotions as health care, it is administratively and politically impossible to control or materially curtail over-utilization of services and, in some instances, outright misuse under a government insurance plan.

In addition, there is the added factor that the Government of Canada's plan contemplates public ward care in contrast to semi-private coverage now held by the majority of the citizens of Ontario. Therefore, in addition to a greatly increased tax load for the government-sponsored plan, additional payment would be necessary for accommodation now available without extra cost to the majority.

2. *Availability and standards of hospital care would not be improved along with increased costs to the individual taxpayer.* In fact, in the opinion of many the standard would deteriorate along with increased costs.

The uniformity essential to a government plan, the unavoidable rules and regulations and the restrictions which rising costs would compel, would retard the rapid progress towards higher standards and more effective hospital care. In particular, necessary expansion and improvement of hospital facilities would suffer.

Experience again has shown that under government hospital plans, hospital accommodation rarely keeps pace with demand. Increasing costs of the plan, combined with withdrawal of private support in the field of hospital construction, have made contemplated hospital additions impractical. The net result has been an ever-growing list of people waiting to be admitted to hospitals, and it is reported that the number today in the United Kingdom is 500,000, with some people waiting as long as two years. In fact, in the United Kingdom there have been no major hospital additions since 1939.

This, we believe, cannot help but result in unnecessary loss of life, loss of health and suffering as a result of difficulties in obtaining admission to hospital for cases urgently needing care.

3. *The method of financing a universal plan, whether it be a combination of premiums plus supplementary taxation or by taxation alone (the end result under most government-sponsored plans) or the way in which costs are shared between different levels of government, is in reality academic and mere juggling of figures. In the final analysis, the taxpayer of Ontario will have to finance any Ontario plan.* Even if the Government of Canada were to increase its contribution to the total cost, this would not materially add to the attractiveness of the plan to citizens of Ontario.

4. *In practice there are strict limitations to the total taxation that can be imposed by elected representatives in a democratic society.* If a costly universal service is financed by taxation, we could not escape the sure consequence that other services, which admittedly must be financed by taxation, will suffer. As examples, the fields of education and highway construction could, we believe, be affected adversely.

5. *If such a plan were adopted this would be a further large and irretraceable step on the road to socialized medicine.* A hospitalization plan in itself may seem to many, including some members of the medical profession, a separate issue, but it is not difficult to look forward to the day when similar demands would be advanced for universal plans covering medical and surgical care.

6. *The plan is unnecessary because better alternatives exist.*

PENSIONS FOR THE SELF-EMPLOYED

On Friday, January 4, a delegation consisting of Dr. J.-M. Laframboise and Dr. Armand Rioux, representing l'Association des Médecins de Langue Française du Canada, and Dr. R. M. Mitchell and Dr. A. D. Kelly, representing the Canadian Medical Association, waited upon the Honourable Walter Harris, Minister of Finance, and Dr. A. K. Eaton, Assistant Deputy Minister. The purpose of this interview was to present the views of the medical profession of Canada on the desirability of affording to self-employed taxpayers deferment of income tax on their personal contributions to retirement funds.

The submission reproduced hereunder was presented and discussed in considerable detail. It was apparent that the effect of this proposal on the revenue had been calculated by the Minister, and that such considerations would be balanced against the justice of the claim that self-employed taxpayers should receive equality of treatment with taxpayers now eligible for inclusion in registered pension plans.

It would be misleading to suggest that the arguments presented were accepted *in toto*, much less that any commitment was given, but the delegation emerged with the hope that our views would receive serious consideration and that legislative action might conceivably follow.

SUBMISSION TO THE HONOURABLE MINISTER OF FINANCE

The Canadian Medical Association and L'Association des Médecins de Langue Française du Canada submit herewith a brief on behalf of the medical profession of this country in respect of an anomaly of the Income Tax Act. We refer to the position of the self-employed taxpayer respecting his personal contributions to annuities or other forms of retirement income. On several previous occasions, attention has been called to the favoured position of the participant in registered pension plans whereby he is afforded the advantage of tax deferment on his own and his employer's contributions. It is our belief that the time is now opportune to extend this privilege to members of the professions and other taxpayers who by the nature of their work have not been eligible for inclusion in registered pension plans.

We respectfully suggest that the situation of the practising physician is typical of that of many other self-employed taxpayers, but since we undertake to speak only for doctors, our argument will be confined to considerations which affect the medical profession.

We of the medical profession must take some responsibility for the extraordinary increase in longevity which has occurred within living memory and which is an important reason for the widespread concern in provision for retirement. Although doctors have not shared the increasing span of life to the degree which is applicable to the population generally, we do survive longer than our professional forbears and must consider means for support following our earning years.

The long and expensive education of a doctor at both undergraduate and graduate levels results in his entry into gainful employment at a relatively late age. His earnings reach their maximum only after a period of years, they are briefly sustained and they decline in a manner which is related to his advancing age. A medical practice, laboriously built up, does not represent a capital asset which may be disposed of on death or retirement and the doctor's income is absolutely dependent on his personal efforts and ceases when he becomes incapacitated. None of these factors operate to this degree in the case of taxpayers employed in business and industry and, in sum, they constitute the essential reasons why members of the profession should be encouraged and aided in their efforts to build up a retirement income.

As citizens we share your concern at the present inflationary trends which reduce the real value of our currency. We suggest that the proposal which we are advancing would encourage saving and would act in some measure as a deterrent to further inflation.

Effective saving out of income is made increasingly difficult by the current high cost of living and the heavy load of taxation applied during the most productive years. Evidence is not lacking that economic uncertainty and the necessity of continuing to work beyond the usual retirement age is having an adverse effect on recruitment to the professions where self-employment is the rule. In the medical profession, particularly, the public interest will be served by removing one of the handicaps inherent in the present situation.

It is our understanding that one of the conditions for registration of a pension plan is that employer contribution to the fund must be made in addition to the tax-deferred employee contribution. It is further our understanding that more than four thousand such plans have been recognized and registered. In the case of self-employed persons, the element of employer contribution is, of course, lacking but it is our view that the self-employed taxpayer should be permitted to contribute the equivalent of both elements.

If in the interests of administration it is necessary to group self-employed doctor taxpayers into one or more registered pension plans, our Associations will give consideration to organizing such groups and to establishing either a trusteed pension fund or a group deferred annuity contract. We observe with interest, however, that the 1956 Finance Act of the Parliament of Great Britain does not require the formation of such groups, but appears to confer on the taxpayer the right to select the deferred annuity which he prefers from among the policies which comply fully with the conditions of the Act. This is reminiscent of the compulsory savings provisions of wartime taxation and it is suggested that its application to contributions by the self-employed in Canada would not present insuperable administrative difficulties.

We recommend most urgently, then, that in justice and equity the self-employed taxpayers be granted tax deferment on their personal contributions to their own retirement funds. We suggest that the Income Tax Act be amended to give effect to this wholly desirable means of saving and that the following conditions be incorporated:

(a) That the Department of Finance recognize and register retirement funds established (i) on the basis of a group contract provided by the relevant professional or other Association for its self-employed members, or (ii) on the basis of the purchase by the self-employed taxpayer of a deferred annuity of approved type.

(b) That the age of retirement and maturity of the contract be not earlier than 60 years or later than 70 years.

(c) That the benefits be taken as a pension for life or for a guaranteed number of years whether by the annuitant or his designated next-of-kin under a joint survivor option.

(d) That the retirement policy be non-assignable and that it be not surrenderable for cash except with the occurrence of total and permanent disability.

(e) That in the event of the death of the participant before reaching retirement age, return of premium and profits be made to his estate.

(f) That the tax deferred contribution of the participant be up to 10% of his gross earned income or $3,000. per annum, whichever is the lesser. In the case of older entrants to the plan, these amounts should be increased by a factor which takes account of their age and diminished years of contribution before retirement.

It is unnecessary to elaborate further that self-employed taxpayers need the encouragement to make provision for retirement income which could be provided by placing them on terms of equality with members of registered pension plans. We recommend most earnestly that appropriate action be no longer deferred and that at the coming session of Parliament legislation be passed to amend the Income Tax Act to permit tax deferment on personal contributions to pension plans.

L'Association des Médecins de
Langue Française du Canada
par H. TRUDEL
Secrétaire-Trésorier Général

The Canadian Medical Association
per R. M. MITCHELL
Chairman, Income Tax Committee
A. D. KELLY
General Secretary

TOBACCO RESEARCH FUNDS

The Tobacco Industry Research Committee, which began in 1954 announces that its new appropriations of $700,000 for research into tobacco use and health bring to a total of $2,200,000 the funds which they have provided. More than 60 independent scientists in hospitals and research institutions throughout the U.S.A. are now receiving grants from the Committee. In awarding grants the Committee is advised by a scientific advisory board which is given full freedom in programming. Not all the research work is related to tobacco, but some basic medical investigation is also being carried out.

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THE CITY OF EDMONTON

This year the Canadian Medical Association Annual Meeting moves out to the West, to the city of Edmonton, where the Alberta Division will play host to its colleagues. Some basic information on the city of Edmonton may be helpful to those planning to spend the week of June 17-22 in this thriving and go-ahead city.

Edmonton, now a thriving city of close on 300,000 inhabitants, first appears in history in 1795 when the Hudson's Bay Company established a trading post called Fort Edmonton in tribute to the clerk of the post, John Pruden, a native of Edmonton, Middlesex, England. Unfortunately in 1807 the fort was looted and destroyed by Blackfeet Indians, and a new post built the next year was soon abandoned. The definitive history of Edmonton begins in 1819 when Fort Edmonton was built on a site immediately south-east of the present-day Alberta Legislative Building. This was an elaborate fortress 310 feet long and 210 feet wide, surrounded by a 20-foot-high palisade, complete with battlemented gateways and bastions surmounted with guns. Situated on the Saskatchewan River and in close proximity to the Peace River and Athabaska River, Fort Edmonton was a logical trading centre and stopping place for voyageurs, traders and missionaries. Explorers passed through Edmonton on their way to the North-West Passage and the Coppermine River. In 1869 the Hudson's Bay Company transferred the vast territory of Rupert's Land, which included present-day Alberta, to the new Dominion of Canada. In 1874 the development of Edmonton was greatly helped by the arrival of law and order as represented by the first detachment of the North-West Mounted Police.

In 1881 the first paper, *The Bulletin*, was established, and in 1884 the first telephones in Western Canada appeared in Edmonton. In 1892 it became a town and soon afterwards its population increased rapidly as a result of the Klondike Gold Rush. Many prospectors were wise enough to stop at Edmonton, and others came back from the North-West disillusioned and seeking a stable employment.

In 1904 Edmonton had a population of 7000 and was incorporated as a city with a mayor, commissioners and council. Next year the Province of Alberta was formed and Edmonton was chosen as its legislative capital, in the teeth of severe opposition. In this same year the Canadian National Railway (then known as the Canadian Northern Railway) reached Edmonton, though the Canadian Pacific Railway did not link up with the city until 1912.

The University of Alberta began in Edmonton with classes in local high schools in 1908. The first classes contained 45 students; now there are approximately 3500 full-time students and about 1700 summer school students. After 1918 the expansion of the city began again, aided by the coming of the age of aviation. World War II did not stop the expansion, for Edmonton became a strategic airport and also the starting point of the 1600-mile Alaska Highway running through the northern wilderness to Alaska.

Ernest Brown Collection

Fort Edmonton in 1890 occupied an impressive site below the present Legislative Buildings. The large structure in the middle was the Athabasca Building, while at the right was the office and trading store. The remains of the fort were demolished in 1915.

Canadian National Railways photograph

Aerial view of Edmonton today. In the foreground is the Macdonald Hotel, headquarters of the C.M.A. Meeting June 17-21.

Alberta's future was radically changed with the discovery of oil at Leduc in 1947, which brought multimillion-dollar industries to Edmonton's door and feeding stations for two giant pipelines to carry oil across the continent.

With the oil industry and the natural gas industry, with its growth as a manufacturing centre, and with its strategic position as a distributing centre for agriculture, the future of Edmonton would seem to be assured. Since 1949 the population of Edmonton has increased at a fantastic rate, faster than any other North American city. It is expected that the population will have doubled in the nine years between 1950 and 1959.

We hope that you will be able to come to Edmonton for the week of June 17-22, and that you will find time not only to participate in scientific and business meetings of the Canadian Medical Association but also to look around and see what is happening in this progressive city, the gateway to Canada's natural wealth. We'll tell you about the other attractions in a later issue.

REDUCED RAILWAY FARES FOR THE ANNUAL MEETING

Arrangements have been made with the Canadian Passenger Association to provide reduced railway fares for members of the Association and their families proceeding to the Annual Meeting at Edmonton.

Adult round-trip fares will be available for one and one-half times the normal one-way fare, plus 25c.

Authorized dates for starting the going journey are as follows:

Western Lines (all points west of Port Arthur and Armstrong): June 10-20 inclusive.

Eastern Lines: June 8-18 inclusive.

Newfoundland: June 6-16 inclusive.

A return limit of 30 days applies to these tickets.

Identification Certificates to permit your purchase of tickets at this reduced rate may be obtained on application to the General Secretary, C.M.A., 150 St. George Street, Toronto 5, Ontario.

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MISCELLANY

AN INTRODUCTION TO MEDICINE IN RUSSIA*

D. M. BALTZAN, M.D.,† *Saskatoon, Sask.*

[These notes are based on a trip to Russia undertaken by the author in September 1956. —Ed.]

On arrival in Leningrad—or old St. Petersburg—one is reminded right away that the city had been under siege for 900 days during the last war. There was naturally more important business on hand than to take blood pressure readings on people. The suffering during this long siege can be left to the imagination. But long after the siege was lifted and stability was restored a new kind of suffering cropped up and kept mounting. The blood pressure amongst the survivors kept rising in numbers and degrees. The Russian doctors called it "blockade hypertension". The phenomenon is so chronicled in their medical literature. Medical students must include "blockade hypertension" in their list of types of hypertension. It is explained that with poor nutrition there was a low tonus and with improvement the tonus increased and was complicated by a delayed siege-shock-reaction.

Our first acquaintance with Russian medicine, and men plus women in white, was on a visit to the Metchnikoff Medical College in Leningrad. I quote Dorland's dictionary for the devious description of the namesake, "a Russian physiologist in Paris, the discoverer of phagocytes and phagocytosis". This institution is a self-contained medical school and hospital built in pavilion style. The reception we received from the director and his associates was more than hospitable, it was intimate. The welcome gave us the feeling we were strangers from another planet—let us say Mars. I choose Mars because everywhere we were continually asked why we wanted war. We thought we were the least representative war-like looking specimens in captivity. Our questions and their answers were all verbal. (We cautiously asked permission to jot down some notes and that was unnecessary.) Statistical figures, percentages and estimates are therefore approximates. Innocent, simple questions can be most embarrassing. I was asked how many medical schools there were in Canada and I gave the figure 12 most uncomfortably; luckily it proved correct when I later added up the score. There are 75 medical schools in Russia.

We learned at the Metchnikoff Medical College, while walking the wards and stopping to examine hearts in a ward devoted to the treatment of congenital defects, that this school guides the training of its medical students right from the beginning towards a career in public health or sanitation. A Metchnikoff graduate is a complete doctor with a tassle. It is a two-in-one proposition. This is a significant innovation. It may be a portent for the future with our own crowded schedules of today. On entrance a student knows the end at the beginning, but the end is also the beginning of further training in this field. This unique feature applied to other medical schools whose main goal is pædiatrics or psychiatry, which are two other specialties upon which there is a lot of emphasis. It may tickle the vanity of, or elicit sympathy for, our psychiatrists to hear this: Psychiatrists are paid 30% above the basic salary of the average physician and are given two months' holiday instead of the usual three weeks' annual holiday. It appears that in Russia it is recognized how harmful patients can be to doctors. It's a noble thought. It would be good for certain kinds of patients to hear about it. If extended further there may even be just cause at times for medico-legal actions in reverse.

All medical schools in the Soviet Union operate on a uniform curriculum. This integration is accomplished by a "Cabinet of Methodology" which is a department of the Ministry of Health in collaboration with the Ministry of Higher Education. I met half a dozen members who function as members or advisers to the "Cabinet of Methodology." They are a sincere lot; they readily confessed some misgivings about this uniformity and regimentation. When dealing with 200 million people, all figures are proportionately astronomical. In 1913 there were only 16,000 students in medicine in all Russia. Now there are 142,000 medical students, and 18,000 students graduate annually. In four medical schools visited, 500 students are admitted to the first year and so 3000 medical students mill around the unit, necessitating staggered classes and clinics. It was interesting to hear that less than 4% who enter fail to finish (our casualty list ranges up to 15%). Attendance is compulsory. No aptitude tests are used; previous records serve as the basic criteria. Medallists have first claim and 50% of the applicants are medallists. The girls win more medals than boys and this is one reason for their preponderance.

Opportunity is given to the practising physician to proceed to higher qualifications and specialization. A close lookout is kept for the talented students, who are steered towards more scientific pursuits. Over 70% of the graduate physicians are women. Only 10% do surgery. In spite of this high rate of women, not a single woman doctor at the head of any department was assigned to greet us. There is considerable resentment but also very good reason for the disproportionate representation in the profession. I quote the chief of one hospital, who said, "Regretfully we have so many ladies in the profession because many men had to be diverted to other technical professions."

The medical schools were divorced from the universities in 1935. Medical education comes within the domain of the Ministry of Higher Education and the training is controlled by the Ministry of Health. It will please our ladies to hear that the Minister of Health is one of their sex. The reason given for the separation of medical education from the universities was "to better facilitate the dispensing of public service". If this is the only reason, it is too practical and technical. I could not help feeling that the split would ultimately assert itself on the philosophy of medicine and the relation to its scientific application. It might be all right in a one-party system of government with a stereotyped philosophy—if a one-party government system is all right at all. On the contrary, our own medical schools struggled for a long time to come under the university umbrella.

We were surprised and flattered when we were asked to call at the Ministry of Health to meet with the Deputy Chief of the Foreign Relations Department. He had on hand that morning a number of leading academicians, the chief of all medical colleges of the U.S.S.R., the professor and head of the neurophysiological institute of the Academy of Medical Science, and the head of the department of stomatology. The Ministry official was the youngest of the lot. His doctor-interpreter spoke perfect English. We all sat transfixed and listened to a long tailor-made declamation. The list of activities of this department ranges from training students for the profession to supervision of a three-year compulsory service of graduates in outlying districts —always under an experienced physician; the manufacture of orthopædic appliances; the manufacture of pharmaceuticals; and the publication of medical textbooks in their own printing press. Writing textbooks is assigned to selected experts in the field on a competitive basis. The successful author may get 100,000 roubles or more, plus a 60% royalty on all reprints. Some doctors are "roubellionaires". The "methodologists" felt this was a wise procedure for producing textbooks. At first glance this strict supervision seemed meritorious. However, I felt cooled by this illustration

*Abridged from the Annual St. Paul's Hospital Staff Christmas Address.

†Chief of Staff, St. Paul's Hospital, Saskatoon.

in its defence, "Two textbooks of chemical pathology were returned because they varied from the standard textbooks on biology." Such uniformity, I thought, could pyramid error upon error. After listening to this doctor-official, who was very serious and sincere, the best time was had in the free-for-all after he was called away on official business. The very congenial academicians remained and were frank, fair, cynical and proud all in one, in our interchange of ideas.

There is not time enough to refer to student affairs, the medical course, medical societies, journals, the role of the Academy of Medical Sciences, and all hospitals visited, including one in the distant Republic of Uzbekistan. I was favourably impressed by the physicians, surgeons and research workers and disappointed with the net results, which are not their fault. The sum total must be judged against the back-drop of the brave-new-world wholesale approach to the social and economic adventure.

The use of cadaver blood for blood transfusions is prevalent. The blood is removed up to six hours after death and preserved by refrigeration without citrate for three weeks. Each corpse delivers 2-4 litres of blood. Exsanguination is not made in traumatic deaths. In twenty years, 23 tons of cadaver blood was collected. It is claimed that blood transfusion reactions are reduced by 50%. Also it is a matter of necessity. Blood is otherwise hard to get because—it was insinuated—there is no monetary attraction to donors, and in fact, there is not the same patriotic inducement which existed during the war.

I saw a novel centralized hospital devoted entirely to "acute" surgery. The surgery performed is spectacular and skilful. There was this comment: 30% of all acute gall-bladder inflammations are operated upon because, if the patients recover otherwise, they do not return. Our poor surgeons are blamed for pecuniary reasons. Over there the surgeon is shielded, because at the head of every team stands the internist. I naturally complimented them on their very good judgment. Forty major operations are performed daily and 25 are emergencies, in this central "acute" hospital.

What we have in common is not interesting. I did not select contrasts to cast aspersions, for the differences are exciting and instructive. In a 600-bed hospital which is extremely well organized the bed distribution was: surgery 250 beds, medicine 200 beds, and 150 beds for abortions. It was explained that before the end of two months' gestation, pregnancy is terminated at the discretion of the patient and after two months the decision is made by a commission or consultative team. Because we must have seemed jarred, it was further explained that there were too many deaths and too much crippling due to stealthy means of abortion.

It was noteworthy that in Moscow there are eight hospital beds per 1000 population, with an expected increase to 11-13 beds. The average stay per patient is 40-45 days, and this does not seem to trouble anybody. We feel self-critical if the average occupation is for more than 18-20 days and think there is laxity in the management of the patient. Free hospital care, free drugs and free medical services are not the complete solution of the problems of sickness. This is a limited view. The best treatment, the quickest cure and surest prevention, these are the ultimates in medicine. They are not free under any system. In Russia the cost is met by invisible cut-backs in the earnings of the workers because government needs so much more. The worker is paid less and charged more for the cost of living. The god-state gives and the god-state takes. In other places the cost is met by direct or invisible taxation. The ideal is that the best services be available to all people and that no one should ever be bankrupted by the cost of any illness. Matching the free and lax Soviet system with our private and pooled system, our way in the end is more economical, in my estimation, for the individual and will be cheaper than a national gift. Our present plans will equitably cover all in need of treatment and eliminate the crushing cost for the individual.

In Russia there are numerous convalescent and so-called preventoriums. Both are commendable adaptations to the needs for accommodation. They have not yet demonstrated any benefits of a scientific nature. (We certainly would have had our attention drawn to any such results.)

The doctors are extremely conscious of the personal, physician-patient, relationship, which is difficult to maintain on the system of 8-hour duties or less for each doctor, requiring three or more shifts in 24 hours, or as in some cases a straight 24-hour duty and 48 hours' lay-off.

Although there is a uniform standard salary for all doctors, there is a great disparity in incomes between the few in high places and the majority. We are sometimes taunted with a profit motive in our system; the same competition to this end in Russia is called a reward for success. What puzzles me is who rewards? And who measures success?

Doctors in high places belong to a privileged class. The Soviet Union is only theoretically a classless society. The emphasis placed on requiring experience before attaining a responsible post appealed to me very much. Team work (collectivism) is overrated, I think, and we are leaning heavily in that direction. This catch-phrase formula has its drawbacks to which more attention should be paid. Medicine isn't a sport. Self-expression and individual drive suffer. The inspiration which comes to one man alone in the night or at dawn has given to the world of medicine the most fantastic discoveries. The flame of an idea glows dim when exposed before too many unseeing eyes. (I see the ghost of Banting.) Teams should be available (and money) to help the visionary haul his ideas through the maze of experiments turning theory to fact. We need not fear; the boorish "chief" is extinct in our society. It's men that make institutions—institutions don't make men!

PUBLIC HEALTH

OTTAWA NEWSLETTER

(From the Department of National Health and Welfare)

AMENDMENT TO FOOD AND DRUGS ACT

An amendment to Schedule F of the Food and Drugs Act was published on December 13, 1956. The amendment is as follows:

1. Part II of Schedule F to the Food and Drugs Act is amended by adding thereto the following:

Chlorambucil, its salts and derivatives
Chlorpromazine and its salts
Oleandomycin, its salts and derivatives
Phenmetrazine, its salts and derivatives
Sex hormones (except cosmetic preparations containing sex hormones, which are demonstrated to be free from systemic effects)
Tetracycline, its salts and derivatives

2. Part II of Schedule F to the said Act is amended by deleting therefrom the following:

Chlortetracycline and any salt or derivative thereof
Oxytetracycline and any compound thereof
Sex hormones (except skin creams containing sex hormones, which are demonstrated to be free from systemic effects).

Canad. M. A. J.
Feb. 1, 1957, vol. 76

LETTERS TO THE EDITOR

SUBUNGUAL HÆMATOMA

To the Editor:

I have read the article "Subungual Hæmatoma," written by Dr. William A. McElmoyle (*Canad. M. A. J.*, 75: 593, 1956), and I beg to contribute an experience of my own with this condition which I think worth mentioning.

Dr. McElmoyle's article was specially directed to general practitioners who may deal with this common injury in their office. A simple and effective method of operation with a simple instrument is described, but one important step should always be emphasized: tetanus prevention. I do not think that every Canadian citizen has undergone active tetanus immunization; on the other hand, I am sure that anxiety about undesired reactions following the administration of antitetanus serum has gained ground among physicians everywhere. But subungual hæmatoma really carries a potential risk of tetanus infection; both the uncleanness at the end of the fingernail and the anaerobic state within the hæmatoma itself support this point of view.

I well remember one patient, whom I took care of in the surgical department of a hospital in Litomerice two years ago. A 62-year-old retired officer had let a stone fall on his foot, while working in his garden. Subungual hæmatoma of the left great toe developed, but the skin-surface remained untouched. A sterile cover was put on by a family physician; prophylactic antitetanus serum was not given.

After a fortnight trismus developed. Because of difficulty in opening his mouth he first visited a dentist, who even extracted a decayed molar because of a supposed dental reason for the trismus. The patient no longer remembered his recent injury. But his condition became worse and finally tetanus was recognized by his family physician.

When he was admitted to our surgical department 16 days after injury, the disease was combated by all possible means. From beneath the nail a small piece of necrotic tissue was shelled out, in which *Clostridium tetani* was identified.

Fortunately this patient was cured—a relatively long incubation period being a favourable factor.

Such a complication of subungual hæmatoma is certainly not common, but it is possible. Therefore it is our principle that subungual hæmatoma should never be treated without due precautions against tetanus infection.

MIROSLAV KABELKA, M.D.
Praha XII, Sumavská 6,
Czechoslovakia,
January 3, 1957.

INFECTION AND THE COMMUNION CUP

To the Editor:

This question was discussed in "Any Questions?": *British Medical Journal* of May 8, 1954, Vol. 1, page 1107. In the answer to the question "What are the risks of infectious diseases being spread by this means?" reference was made to the work of Burrows and Hemmens (*J. Infect. Dis.*, 73: 180, 1943), who carried out bacteriological tests. Dr. Lilias M. Jeffries commented on the answer in "Notes and Comments", *Brit. M. J.* of May 29, 1954, Vol. 1, page 1278.

It might be worth while to enquire whether the hygienic precautions described are practised uniformly wherever a common cup is used.

5600 Dalhousie Road,
Vancouver, B.C.,
January 11, 1957.

J. M. MACLENNAN,
M.D., D.P.H.

AN APPEAL FROM SCOTLAND

To the Editor:

An opportunity has arisen to acquire and preserve the birthplace of two of the most famous men in medical history.

William and John Hunter were born at Long Calderwood House in East Kilbride, the former in 1718 and the latter in 1728. William was not only a famous obstetrician but also the originator of modern and enlightened methods of anatomical teaching and investigation. John, the younger brother, was even more famous and ranks among the immortals in the history of medicine. If the birthplace of any famous man is worthy of preservation the high claim of that of the Hunters, who made such valuable contributions to the science of medicine, needs no advocate.

The farm house, a typical building of its period, with no special architectural pretensions, is still occupied, but the years have taken toll of its fabric, particularly the floors and woodwork. Without adequate restoration it cannot long survive.

An ad hoc committee, representing the East Kilbride Development Corporation, the University of Glasgow, the Royal Faculty of Physicians and Surgeons and the Western Regional Hospital Board, has meantime been set up to start the necessary appeal. A total sum of about £20,000 is the aim, and, of this, £3500 will be needed urgently to restore the fabric of the house, leaving the balance as an endowment fund.

It is planned to organize a board of trustees with appropriate representative interests to maintain the restored house as a memorial, a museum, a place of pilgrimage and possible research centre.

Urgent action is necessary to save this national historic monument as a fitting memorial to the two brothers whose names will ever be gratefully remembered for their unique achievements in the advancement of medical knowledge.

The committee appeal to you to make a contribution to the fund. Cheques should be made payable to the "Hunter House Memorial Fund" and sent to the Hon. Treasurer, Royal Faculty of Physicians and Surgeons, 242 St. Vincent Street, Glasgow, C.2.

ALEXANDER SMITH, M.B., Ch.B., F.R.F.P.S.,
Honorary Secretary,
Hunter House Joint Committee.
December 12, 1956.

IN DEFENCE OF NURSING

To the Editor:

Some two months ago, the *Canadian Medical Association Journal* published an article on nursing education entitled "In Defence of Nursing". Some Canadian nurses, placed in positions of special responsibility for Canadian nursing, have been disturbed about the content of this article. Let us hasten to explain that these nurses are relatively youthful. A seasoned old warrior such as the present writer sympathizes with their concern, but suggests that they should not be troubled. The article appears to belong in what might be called true apostolic succession. Somewhat similar sentiments have been appearing in medical journals for many years past—even in the good old days; and no doubt there will be more for some years to come, for it is quite certain that the problems of nursing education will not be solved at an early date.

Why be concerned? Who will be influenced by these articles? Perhaps it will be approved by a small number of those who have already made up their minds that nursing education is directed foolishly and that it is wandering *uncritically* down a broad path to destruction. Why deny these readers a glow of satisfaction in having their opinions confirmed. Let us be wise enough to let this pass.

Now we are ready to comment on the usefulness of the article. Brushing aside certain irritation, the article can make some of the nurse readers and their medical colleagues work more diligently than ever in their present efforts to guide nursing education patiently and wisely. We are all glad to see reference to some of the procedures that already we are trying so strenuously to promote, such as better clinical teaching, called by the authors "learning on the job".

We suggest that among the medical men who read the article with full approval, one group will be missing, namely, intelligent doctors with young daughters who wish to enrol in nursing. In saying this, we speak from experience. We remember vividly one morning in our own nursing school of the University of Toronto. Early that day, a Toronto doctor, rather highly placed but without daughters interested in nursing, advised that we take care not to give our students too much education! Later in the same morning, there came a general practitioner from another city who explained that his daughter wished to enter nursing. This father said that he was glad to agree with his daughter's wish, but that he himself wanted her to have some further education. Hence his interest in the university course that combined general and professional education. We found this interesting.

The nurses who direct, or influence, nursing education are grateful for constructive criticism *as long as this assumes education*. We know that we share the grave problems facing all professional schools. We know, too, that sometimes we grasp at the shadow, rather than the substance, of true educational values. Indeed we make many mistakes, but sincere and intelligent effort will find good patterns. One piece of evidence gives us courage, namely, the fact that poor schools with meagre curricula find it almost impossible to recruit students, while the schools that offer more have ever-increasing enrolment. The young women of today who have the "character and personality" for which our medical authors ask, are the young women who are demanding some general education beyond high school: and they are seeking nursing schools in which they may gain an understanding of their work.

Nursing education needs above all else two factors: first, teachers who are unusually well-educated women and who are also devoted nurses; and secondly, the best of clinical teaching. Many of us are trying to provide these conditions for our schools.

KATHLEEN RUSSELL

Toronto, January 14, 1957.

THE LONDON LETTER

(From our own correspondent)

OMINOUS OMENS

It will take more than the traditional New Year resolutions to ease the state of tension that has risen between the Ministry of Health and the British Medical Association over the latter's claim for increased remuneration. Whatever the merits, or demerits, of the timing of this claim—and there are not a few who feel that the timing was unfortunate—it is difficult to find any excuse for the curt manner in which the claim has been handled by the Minister of Health. To reject out of hand, and without giving any reasons, a carefully reasoned claim by a professional body such as the British Medical Association is not merely discourteous. It verges upon the insulting. It is not surprising therefore that the British Medical Association has now decided that it must be prepared for the worst, and has requested the British Medical Guild to overhaul its local machinery in readiness for swift action should this prove necessary.

The British Medical Guild, which is administered by a board of trustees, all of whom are also members of the council of the British Medical Association, was originally established during the critical days preceding the founding of the National Health Service. It is empowered to act when drastic measures are called for in a situation affecting the profession as a whole. Such measures include whatever steps might be necessary following a decision by the profession to withdraw from the National Health Service or to restrict its activities within the Service. Although the British Medical Association has emphasized that no decision has yet been taken to withdraw from the National Health Service, the mere fact that it has been felt necessary to overhaul the working of the Guild is an indication of the serious potentialities of the present dispute.

PAWNS OR PHYSICIANS?

The current controversy, however, is not merely a matter of remuneration. It is a symptom of a much more deep-seated malaise, as Dr. Ian Grant, the newly elected president of the College of General Practitioners, pointed out in the James Mackenzie Lecture which he delivered recently before the College and which is published in the January issue of *The Practitioner*: "So long as the health of the nation is used as a vote-catching instrument by the politicians, so long we, as doctors, must feel we are mere pawns in the game of political chess." His appeal to remove the National Health Service from the sphere of party politics is no new one, but it is one which has been receiving increasing support throughout the profession of recent months. Envious eyes are being cast upon the Health Service in Australia and the current negotiations for a system of compulsory health insurance in Canada. Whether any comparable scheme could now be introduced over here is problematical, particularly in view of the laudatory comments on the present structure of the National Health Service which were expressed by the Guillebaud committee appointed by the last Minister of Health to report on the working of the Service. Taking into account the political situation in this country, it is not only the cynics who feel that it is asking too much of human nature to expect the politicians to give up the useful weapon they possess in the present structure of the health services of the nation.

HARVEY TERCENTENARY CONGRESS

"A Review of the Present Knowledge of the Circulation" is to be the appropriate theme of the international congress which is to be held in London and in Folkestone on June 3 to 8, to commemorate the death of William Harvey in 1657. This Harvey Tercentenary Congress has been organized by the Harveian Society of London, with the co-operation of various other bodies, including the Royal Society, the Royal College of Physicians of London, the Cardiac Society, the Physiological Society and the Medical Research Council. The scientific program, which will occupy five days, will be held in London. The concluding day of the Congress will be spent in Folkestone, Harvey's birthplace, and will be presided over by Sir Geoffrey Keynes. Full details of the Congress can be obtained from the congress secretary, 11 Chandos Street, Cavendish Square, London, W.1.

SOCIETY OF IMMUNOLOGY

British immunologists have been slow to stake their claim as specialists in their own right. They have now decided, however, that the time has come to set up an organization which will bring them in closer touch with each other. We therefore now have a British Society for Immunology. The fact that over 250 people attended the inaugural meeting suggests that the new Society meets a real demand. The wide range of subjects covered by the 22 papers read at this inaugural two-day scientific meeting indicated most forcibly the wide complexity of the subject and its many ramifications in all branches of medicine. WILLIAM A. R. THOMSON

London, January 1957.

Canad. M. A. J.
Feb. 1, 1957, vol. 76

WORLD MEDICAL ASSOCIATION

PROTECTION OF CIVILIAN DOCTORS

The World Medical Association has adopted an emblem to be used by civilian doctors, their ancillaries and civil defence installations.

Studies of the 4th Geneva Conventions and Conferences with representatives of the International Committee of the Red Cross revealed that the protection of the Red Cross emblem did not and could not apply except to doctors, ancillaries and medical installations in military organizations. Hence, in time of war, the civilian doctor, his assistants and civil defence units not under military control were without protection in carrying out their responsibilities to the population.

The World Medical Association has adopted a medical emblem and a Code of Medical Ethics in time of war. These were recommended by a joint committee made up of representatives of the International Committee of the Red Cross, the International Committee on Military Medicine and Pharmacy and the World Medical Association with the World Health Organization providing an observer. Adoption by the member associations and legislative enactments in each country and recognition at the international level to insure complete protection under the emblem are now being implemented.

The new *medical emblem* destined to protect civilian doctors, their ancillaries and civilian defence units is a red staff and serpent upon a white field. The staff is represented by a vertical line; the serpent by a sinuous line over the vertical line with two undulations on the left side and one undulation on the right side.

"*Medical ethics in time of war* is identical with medical ethics in time of peace, as established in the International Code of Medical Ethics of the World Medical Association. The primary obligation of the doctor is his professional duty; in performing his professional duty, the doctor's supreme guide is his conscience!"

Subsequent statements in this Code provide:

The primary task of the medical profession is to preserve health and save life.

The doctor, in emergencies, must always give the required care impartially and without consideration of sex, race, nationality, religion, political affiliation or any other criterion and will continue this medical assistance as long as necessary.

All treatment given by the doctor must be in the best interest of the patient.

Scientific knowledge may never be employed to imperil health or destroy life.

Medical secrecy must be preserved.

The privileges and facilities afforded the doctor must never be used for other than professional purposes.

OBITUARIES

DR. JAMES DAWSON, 83, died in hospital on December 28. He was born in Birkenhead, England, and studied medicine at the University of Toronto and Niagara University in Buffalo, N.Y. Until his retirement Dr. Dawson practised in Perry, N.Y. During World War II he was in charge of a practice in Wilson, N.Y.

DR. A. M. DAY died on December 15. He had practised as a physician in Consort, Alta., since 1913. Dr. Day had been Alberta director of the Bank of Canada since July 1955.

DR. FREEMAN R. GUEST, a Windsor surgeon, died in Florida on January 5. He graduated from the University of Western Ontario in 1914, and practised in Windsor for 38 years. In 1939 he became a Fellow of the Royal College of Surgeons of Canada.

Dr. Guest is survived by his widow and one daughter.

COLONEL PERCY SAMUEL LELEAN, emeritus professor of public health in the University of Edinburgh, died on November 6. Colonel Lelean was born in Canada in 1871, and was educated at Hart House School. He graduated in medicine from St. Mary's Hospital, London, in 1895. In 1899 he became a Fellow of the Royal College of Surgeons of England, and in 1905 he obtained the D.P.H. of the English Royal Colleges. Colonel Lelean served with the army in South Africa and India and in the first World War. In 1916 he was appointed C.B. He also served in Egypt and Palestine, and was appointed C.M.G. in 1919. He was the author of many papers on tropical medicine, and wrote a textbook, *Sanitation in War*. From 1919 to 1922 Colonel Lelean was professor of hygiene at the Royal Army Medical College. In 1925 he accepted the chair of public health at the University of Edinburgh, a position he held for nearly 20 years.

Colonel Lelean is survived by two daughters.

DR. ARTHUR LYNCH, 75, formerly chief medical officer for the Canadian Pacific Railway, died on December 31, in Vancouver. He was born in Ottawa and graduated from McGill University, Montreal, in 1903. Dr. Lynch became a Fellow of the Royal College of Surgeons of Edinburgh, in 1906. He was a ship's doctor with the Cunard Line on the trans-Atlantic, and the Booth Line and the Royal Mail Lines to South America. Dr. Lynch practised in Saskatoon from 1910 to 1934. He served overseas in World War I as a major with the RAMC and CAMC. From 1934 until 1948 he was chief surgeon for the CPR. Dr. Lynch was a Fellow of the Royal College of Surgeons, the American College of Surgeons and the International College of Surgeons.

He is survived by his widow, two sons and four daughters.

DR. THOMAS O'HAGAN, 78, resident physician at Jasper Park Lodge, Alta., for 30 years, died in Vancouver on January 2. He was born in Port Huron, Michigan, and graduated from Queen's University, Kingston, Ont. After service in World War I he was in charge of veterans' hospitals on Vancouver Island. In 1920 Dr. O'Hagan went to Lucerne, B.C., as a railway employees' doctor. He moved to Jasper in 1924. He is survived by one son and one daughter.

DR. ARCHIBALD MacKAY

N.E.M. writes: "A word about Dr. Archibald F. MacKay, whose death is noted in the *Journal* of January 1, seems in order, although he would not want it. But he was a great fellow. As a youngster, he served in the ranks in the infantry in the First World War, and, as a mature medical officer, in the field in the Second. Suffering from a severe respiratory illness in Italy, he was sent to hospital. Recuperating, he learned that preparations were being made to "board" him on account of his age. He managed to get his uniform and escaped to duty with the Armoured Regiment. In silent sympathy with the admiration for him, his superior officers took a lenient view of his escape and allowed him to remain with his regiment. I know nothing of any honours that came to him, but if such there were, and there should have been, he would think little of them and mention them never. He told me once that the infantry men in the Second World War had a much tougher job than those in the First! While in university he was the solid friend of those who needed a friend, regardless of race, colour or creed. Both as a practising physician and as Medical Officer of Health of Oshawa, he well served his fellow-men, sincerely, unobtrusively and with a capacity far above the average. Arch MacKay was a truly great man, who deserved much more than these brief disjointed remarks."

ABSTRACTS *from current literature*

MEDICINE

Allergic (Löffler's) Pneumonitis Occurring during Antituberculous Chemotherapy

D. E. WOLD AND D. W. ZAHN: *Am. Rev. Tuberc.*, 74: 445, 1956.

Since Löffler first described his syndrome, characterized by transient pulmonary infiltration with eosinophilia, various allergens have been implicated as etiological agents. In 1952, Warring and Howlett reviewed reactions to para-aminosalicyclic acid and described a case of Löffler's pneumonitis due to this drug. The incidence of allergic pneumonitis secondary to antituberculous chemotherapy can only be estimated. However, excluding the patients reported by Warring and Howlett, only six additional cases secondary to PAS administration have been described in the English literature. The present writers report three additional examples of allergic pneumonitis which occurred during antituberculous chemotherapy. In one case, after the subjective and objective findings had subsided, a test dose of PAS resulted in repetition of the entire syndrome. In the second case, the procedure of testing with PAS was considered dangerous and was not carried out. In addition, the patient had an untoward reaction to isoniazid. In this case, it was therefore not thoroughly established whether the offending allergen was PAS or isoniazid. In the third case, by a process of exclusion, it was established that PAS was the offending allergen. In none of these cases was an "allergic" history obtained. Fever was present in all cases, as well as headache and malaise. Cough was usually also present, and in one case there was severe cough, dyspnœa and the expectoration of frothy sputum. A rash was present in most cases, and eosinophilia was present in all. The pulmonary lesions disappeared within three to six days after discontinuing drugs, although cases are on record in which roentgenographic abnormalities persisted for two weeks or more. The symptoms usually disappear within one to two days after discontinuance of drugs.

In patients treated for tuberculosis, eosinophilic pneumonitis may confuse the roentgenological picture and suggest the occurrence of extension of tuberculous disease, when none is actually present. S. J. SHANE

Anatomical and Pathological Studies in Ventricular Septal Defect.

L. M. BECU *et al.*: *Circulation*, 14: 349, 1956.

Out of 50 cases in which a heart with a ventricular septal defect was studied at necropsy, this anomaly was the only cardiovascular malformation in 34 cases (group A); it was associated with one or more cardiovascular malformations in the remaining 16 cases (group B), but together these did not form traditionally recognized complexes.

Of the 19 patients of group A in whom death was related to the ventricular septal defect, 12 were less than one year of age at the time of death and each of these 12 died of predominantly left ventricular failure. Bacterial endocarditis and predominantly right ventricular failure were the principal causes of death in the patients who died beyond the period of infancy.

Among the 16 patients in group B, 13 were considered to have died of the cardiovascular malformations. Eight patients were less than one year of age at the time of death: six of them died of left ventricular failure and two of right ventricular failure.

Commonly associated cardiovascular malformations included atrial septal defect (four cases), obstructive disease of the aortic arch (five cases), patent ductus arteriosus (five cases) and vascular rings (three cases).

The two oldest patients at the time of death were a 55-year-old woman with only a ventricular septal defect and a 51-year-old woman with ventricular septal defect, patent ductus arteriosus, and anomalous insertion of the chordæ tendineæ with mitral insufficiency.

Each ventricular septal defect was classified according to the region of the ventricular septum it involved. By far the commonest type of defect was situated in the outflow regions of the ventricular septum.

S. J. SHANE

Diffuse Interstitial Fibrosis of the Lungs (Hamman-Rich Syndrome).

I. W. B. GRANT, B. R. HILLIS AND J. DAVIDSON: *Am. Rev. Tuberc.*, 74: 485, 1956.

The writers report three new cases of diffuse interstitial fibrosis of the lungs (Hamman-Rich syndrome), two in elderly women and the third in a 13-year-old girl. These cases demonstrated the typical clinical features of progressive exertional dyspnœa and cyanosis. The patients all showed clubbing of the fingers, which appears to be a useful point in distinguishing the condition from sarcoidosis. In previously recorded cases, although finger-clubbing was often present, its diagnostic value was not specifically mentioned by any writer.

Death was due in each case to respiratory insufficiency, precipitated in one by pulmonary arterial thrombosis and in another by acute tracheobronchitis; in all three patients, cor pulmonale was present. The autopsy findings differed in no essential respect from those in cases previously recorded. Macroscopically, the lungs were grossly fibrotic; the histological features were those of interstitial fibrosis and of an increase in the size and shape of the alveolar epithelial cells, with the formation of a hyaline membrane in two cases.

The clinical, roentgenographical, and pathological features of the other 36 cases so far recorded are summarized and analyzed. No progress has been made towards discovering the cause of the condition since Hamman and Rich described the first case in 1944. The wide variation in the duration of the illness, from a few weeks to several years, suggests that it may not be a distinct pathological entity but the end result of several different processes, which may include viral infections and hypersensitivity to drugs or other agents so far unidentified.

In a few cases, cortisone and corticotropin have promoted symptomatic and occasionally even roentgenographical improvement, but only one patient so treated is reported to be alive. There appears to be a serious danger of a lethal exacerbation of the disease when hormonal therapy is withdrawn, even if it has apparently had no beneficial effect. S. J. SHANE

Hypertensive Pulmonary Vascular Disease.

D. HEATH AND W. WHITAKER: *Circulation*, 14: 323, 1956.

Patients with pulmonary artery blood pressures chronically elevated to levels approaching or exceeding systemic pressures form a distinct clinicopathological entity for which the term hypertensive pulmonary vascular disease is proposed.

The symptoms and signs of pulmonary hypertension dominate the clinical picture in this syndrome. Symptoms of severe pulmonary hypertension are breathlessness on exertion, frequent coughs and colds, chest pain of anginal type, blueness of the lips and nails, and abdominal distension and ankle swelling due to congestive cardiac failure. Hæmoptysis, hoarseness, jaundice, syncopal attacks, and palpitations occur less commonly.

Signs associated with pulmonary hypertension are giant "a" waves in the jugular venous pulse, a parasternal heave, a systolic lift over the right ventricular outflow tract, a palpable second sound in the pulmonary area, which is loud and closely split on auscultation, a Graham Steell murmur, and a pulmonary systolic click. In addition, central and peripheral cyanosis, clubbing of the fingers, jaundice, the signs of congestive cardiac failure, and cardiac murmurs frequently occur.

The electrocardiogram usually shows clockwise rotation of the heart and the ventricular pattern of right ventricular hypertrophy. On radiological examination there is evidence of right ventricular hypertrophy, increased prominence of the pulmonary artery and its main branches, and decreased peripheral pulmonary vascular markings.

Angiocardiography demonstrates a dilated pulmonary artery and a "coppicing" effect in the small branches of the pulmonary vascular tree. The flow of dye through these dilated vessels is abnormally slow. It allows abnormal flow to be visualized and previously unrecognized cardiac defects to be demonstrated.

Cardiac catheterization shows pulmonary artery blood pressures approaching or exceeding systemic pressures and occasionally reveals intrinsic cardiac defects.

The features of this syndrome are illustrated by descriptions of patients with idiopathic pulmonary hypertension, atrial septal defect, ventricular septal detect, patent ductus arteriosus, Eisenmenger's complex, and mitral stenosis and severe pulmonary hypertension, since these are lesions commonly found underlying hypertensive pulmonary vascular disease.

The definitive pathological changes in the pulmonary vasculature are a distinct muscular media with two elastic membranes in the pulmonary arteriole and medial hypertrophy in the muscular pulmonary artery. Frequently in these vessels there is abnormal proliferation of intimal fibrous tissue with partial or complete occlusion of the lumen, adventitial fibrosis, and medial necrosis. Occasionally there is aneurysmal dilatation of thin-walled branches of the muscular pulmonary arteries.

S. J. SHANE

SURGERY

Prevention of Late Complications of Ureterocolostomy by Methods of Fæcal Exclusion.

W. T. IRVINE, C. ALLAN AND D. R. WEBSTER: *Brit. J. Surg.*, 43: 650, 1956.

About two-thirds of patients with a ureterocolostomy show evidence of renal damage. Patients with isolated rectosigmoid or ileal bladders rarely develop chemical imbalance, and there is less renal damage. Studies on dogs indicate that the likelihood of improving the competency of ureterocolic valve mechanisms by better techniques is small. Some form of fæcal exclusion should be practised to protect the kidneys when long-term survival appears likely. It seems profitable to investigate means of lessening the absorptive power of colon mucosa.

BURNS PLEWES

Emergency Management of Wounds of Large Blood Vessels.

H. B. SHUMACKER, JR.: *S. Clin. North America*, 1329, Oct. 1956.

In handling this type of casualty primary consideration is control of hæmorrhage and prevention of death. Attention must then be given promptly to restoration of circulation to the part, and meticulous inspection and bebridement to avoid such sequelæ as aneurysm and arteriovenous fistulæ. The author points out that although the longer the period of ischæmia the more likely is it that thrombosis will have occurred in the distal arterial tree, the time limits of eight to ten hours must be considered arbitrary. He reports patients in whom good circulation has been restored after periods as long as 48 hours.

Reference is made to the principles of repairing these wounds and the suggestion made that in the future the end-to-side by-pass may prove superior to the end-to-end anastomosis. In regions such as the popliteal where extensive dissection reduces the collateral circulation this procedure may be better. Injection of a small amount of heparin into the distal artery is advocated but not its use systemically.

Traumatic arterial spasm may be completely refractory to all forms of therapy, but spinal anæsthesia, paravertebral sympathetic block, periarterial sympathectomy, local application of procaine and some general vasodilating drugs may at times be beneficial. The author suggests that if all these measures are unsuccessful an end-to-side by-pass of the segmental spastic area might help.

A warning is given against the application of heat to the ischæmic limb. Metabolic requirements are increased and gangrene may be precipitated. The author's impression is that there is no confirmatory evidence that local cooling is beneficial although some competent observers are not in agreement with this point.

ALLAN M. DAVIDSON

Comparative Study of Effects of Different Arterial Clamps on the Vessel Wall.

G. F. HENSON AND C. G. ROB: *Brit. J. Surg.*, 43: 561, 1956.

During gastrectomy operations, the right gastro-epiploic artery was used to test the effect of various artery clamps before it was resected. The Crafoord, Brock and Potts clamps were all found to produce a great degree of damage to the wall of an artery of this size, as did a silk ligature over rubber tubing. Much less damage was caused by a bulldog clamp and the Crile clamp. Occlusion of an artery by half-inch tape and a short piece of rubber tubing between the artery and a cholecystectomy forceps on the tape ends appeared to cause least damage.

The tape tourniquet and the bulldog clamp are recommended as light, available and simple when peripheral arteries are temporarily occluded.

BURNS PLEWES

Chemodectoma of an Aortic Body.

D. A. GILLIS, D. P. REYNOLDS AND J. W. MERRITT: *Brit. J. Surg.*, 43: 585, 1956.

A non-chromaffin paraganglioma, like a carotid-body tumour, was removed from the right lower chest, by lobectomy, from a seven-year-old boy in the Children's Hospital in Halifax. It was 4 cm. in diameter and bluish-red in colour. A recurrence was excised from the skin scar two years later and further recurrences did not respond to cobalt-bomb therapy. No autopsy was obtained but there were no clinically evident distant metastases.

BURNS PLEWES

OBSTETRICS AND GYNÆCOLOGY

Cæsarean Section in 10 Years.

L. V. YURYEVA: *Akush. gin.*, No. 4: 32, 1956.

In the period 1933-1949, 3060 Cæsarean sections were reported in the Russian literature. Compared with statistics for 1925-1933, mortality dropped from 7.5% to 5.7%. The proportion of operations due to contracted pelvis dropped from 62.1% to 48.1%; this drop is due to the increased number of operations for other indications, e.g. placenta prævia. The ratio is 48.4% classical to 49.3% lower segment operations. Local anæsthesia is of great advantage but has not yet gained the popularity it deserves. Out of 1125 operations 80.1% were done under general inhalation anæsthesia, 10.5% under spinal and 5.4% under local anæsthesia.

In the author's clinic 237 operations were performed in 10 years (1939-1948), which constitutes 0.56% of the total number of deliveries. Mortality in the first five years was 5.2%, in the second five years 2.5%. Because of the limited use of antibiotics almost all deaths were due to sepsis. The reasons for operation were contracted pelvis in 29.5% of cases; placenta prævia in 40.1% and valvular defects in 7.2%. The percentage of postoperative complications was higher among patients operated on because of eclampsia and pre-eclampsia than in the rest. One out of nine died. This fact points to the danger of Cæsarean section in eclampsia.

The most favourable time for Cæsarean section was found to be 1-10 hours after onset of labour. A lower segment operation was performed in 67.3% of cases. This method is recommended by the author even in cases of placenta prævia. Mortality was 1.9%, while after classical Cæsarean section it was 9.3%. Local anæsthesia was used in 70.1%, general in 21.5%, and spinal in 8.4%. Local anæsthesia is more favourable for both mother and child. The placenta was delivered preferably by gentle pulls on the umbilical cord. Fertility was lowered after the operation. V. R. JABLOKOW

Subarachnoid Hemorrhage and Pregnancy.

D. E. CANNELL AND E. H. BOTTERELL: *Am. J. Obst. & Gynec.*, 72: 844, 1956.

The occurrence of subarachnoid hæmorrhage in pregnancy is not so rare as has been reported previously. Subarachnoid hæmorrhage complicating a normal pregnancy requires prompt neurological and angiographic investigation. Prompt surgical treatment is indicated in pregnant patients in whom subarachnoid hæmorrhage occurs due to a ruptured berry aneurysm or arteriovenous malformation. The obstetrical management of such patients should be based on sound obstetrical principles, Cæsarean section being employed on indication rather than election. ROSS MITCHELL

Late Results of Cæsarean Section.

L.S. PERSIANINOV: *Akush. gin.*, No. 4: 20, 1956.

Cæsarean section is used less frequently in Russia than in other countries, although in recent years there has been a tendency to employ this operation more often. According to the data from the author's clinic, out of 95 women who had had Cæsarean section in the past, 35 had a vaginal delivery and 60 underwent repeated Cæsarean section; of these, 37 revealed extensive adhesions in the abdominal cavity, 15 showed wide defective scars on the uterus, two showed slight scarring and in four cases no scars were detected. More unfavourable results were found in cases of classical Cæsarean section than in the lower segment operation. The scar of the classical operation is often the cause of a sudden rupture of the uterus, which makes a repeated Cæsarean section necessary.

The serious results which may follow Cæsarean section should be considered in deciding upon the need for the operation. Lower segment Cæsarean section is the operation of choice. V. R. JABLOKOW

PATHOLOGY

The Application of an Induced Bronchial Collateral Circulation to the Coronary Arteries by Cardio-Pneumonopexy. I. Anatomical Observations.

J. L. KLINE *et al.*: *Am. J. Path.*, 32: 663, 1956.

This paper describes yet another experimental method of attempting to shunt non-coronary blood into needy heart muscle. This time the source is mainly the left bronchial artery, which is caused to enlarge greatly by ligation of the left pulmonary artery. A nearby part of the left lung supplied by this bronchial artery is then surgically affixed to the anterolateral aspect of the heart and in course of time, usually about five months, an anastomotic system develops between lung and heart which is thought to carry high-pressure oxygenated blood from the hypertrophied left bronchial artery to the heart muscle by way of the left coronary artery and enlarged intercoronary links. This new collateral supply system, in which the vessels at times exceed 1 mm. in diameter of lumen, is supplemented by anastomoses from other arteries, such as the intercostals and pericardio-phrenics, and many of these collateral channels represent expanded pre-existing vessels, as those of the retrocardiac area. Coronary obstruction, partial and complete, was simulated with plastic bands.

The patency of the new connecting vascular field between upper aorta and coronaries which results from this "cardiopneumonopexy" was proved by observing air which had been introduced at the aortic end emerging as bubbles from the coronary ostia, and especially by injecting vinylite of different colours into it to make a cast which was brought into view by dissolving away the enveloping tissue with strong hydrochloric acid. Sometimes these injections were from the coronary ostia and sometimes from the thoracic aorta, but always with the heart *in situ*. From such casts, vascular analyses were made. Branches of the enlarged bronchial arteries were traced as they wound spirally about small bronchioles in the region of the heart-lung apposition, and it was seen that transpleural collaterals directly joined branches of the coronary and bronchial arteries at many levels. Some of these casts are reproduced in striking coloured and black-and-white figures. Controlled functional studies on dogs point to the coronary vessels receiving blood from the induced collaterals described.

The experiments detailed were single-stage operations on 10 dogs, and the authors admit that the adaptation of this technique for man has not yet been worked out. They remark, however, that the bronchial vessels of man can enlarge on occasion, and suggest that part of one pulmonary artery, such as the lingular artery, might be ligated in selected patients as a preliminary to the use of the lingula in a human cardiopneumonopexy. This operation, they suggest, might be used also in the treatment of transposition of the great vessels. C. C. MACKLIN

Accessory Bronchiole-Alveolar Communications.

M. W. LAMBERT: *J. Path. & Bact.*, 70: 311, 1955.

Epithelial tubules, heretofore seemingly unknown, have been discovered connecting the terminal and respiratory bronchioles with the alveoli at the ends of their own recurrent alveolar ducts. These have remained unrecognized because they are not easily seen in routine sections, which seldom show the tubules open and split lengthwise, and they often are obscured by exudate. The material was uncollapsed normal lung from human subjects of all age groups and also from cats and rabbits. With the chest unopened the trachea was clamped, the lungs were removed and the main bronchi ligated; then the lungs were immersed in formol-saline for 2-3 weeks. Included in the studies were sections from lung biopsies, mainly portions of the lingula removed at operations for congenital heart disease or mitral stenosis. Blocks were chosen in which a small bronchus and its branches could be cut transversely in serial sections. Hæmatoxylin and eosin, and Foot's silver, were the stains used. The tubules ranged in length from mere gaps between the bronchiole and the alveolus to say 125 microns (judging from the figures), and the width was up to 30 microns. Some were bifurcated. They sometimes look like the gland ducts which occur in the larger bronchi. The epithelium was continuous with that of the bronchiole and was columnar, cuboidal or flattened, and this usually continued for a little way into the alveolus. Around it there was no muscle. In coal miners, the tubules and their associated alveoli were early sites of dust-cell accumulation. In cats, too, dust cells were often found in the tubules. The author writes: "Tubular communications are thus to be regarded as accessory air inlets to, or outlets from, the pulmonary alveoli." Some 15 examples appear in the photomicrographs, and the positions in the distal bronchioles are indicated in a special figure made by graphic reconstruction. C. C. MACKLIN

RADIOLOGY

Statistical Appraisal of the Use of Radioactive Iodinated Human Serum Albumin for the Detection of Liver Metastases.

S. H. MADELL *et al.*: *Radiology*, 67: 210, 1956.

Previous reports have suggested that the external measurement of the radioactivity of the liver, using the scintillation counter following the intravenous injection of radioactive iodinated human serum albumin, provides a reliable indication of liver metastases accurate

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in approximately 95% of cases. Because of the great importance of such a diagnostic test it was carefully checked in the present study on 44 cases, all of whom were subsequently operated upon with careful direct observation of the liver. No intra-abdominal tumour or liver disease was found in 21 patients who served as a control group. Liver metastases were present in seven cases; intra-abdominal carcinoma without demonstrable liver metastases was evident in another seven; cirrhosis in five and miscellaneous conditions in another five. Careful statistical study indicated that this method of investigation possessed no reliability in indicating the presence or absence of metastatic liver disease. NORMAN S. SKINNER

ORTHOPÆDICS

Recurrent Ulnar-Nerve Dislocation of the Elbow.

H. M. CHILDRESS: *J. Bone & Joint Surg.*, 38A: 978, 1956.

The author discusses 34 cases of ulnar neuritis due directly or indirectly to excessive nerve mobility; seven of the patients needed surgical transplantation. In addition the author examined 2000 supposedly normal ulnar nerves in 1000 selected individuals. A surprising feature of the survey was that no less than 162 subjects had ulnar nerves which were abnormally mobile at the elbow. This abnormal mobility, probably due to congenital laxity of supporting ligaments, usually caused no symptoms unless the nerve was subject to trauma. Industrial workers are more often affected with ulnar neuritis, and the pain is usually in the hand and not at the elbow. Unnecessary and prolonged treatment could be avoided by correct early diagnosis and by informing the patient of his anomaly. In seven cases the nerve was transplanted anteriorly; in this procedure deep intramuscular placement of the nerve is superior to subcutaneous placement.

THERAPEUTICS

Use of Reserpine in the Treatment of Mental Patients Who Are Tuberculous.

A. CRANDELL AND J. MA: *Am. Rev. Tuberc.*, 74: 457, 1956.

Sixty-three mental patients, who also had active or inactive pulmonary tuberculosis, were treated with reserpine parenterally or orally for a period of 2½ to 10 months. The results indicate that reserpine has caused no ill effects on the patients' pulmonary tuberculosis, either active or inactive. It is believed safe to continue this treatment for a long period of time; therefore the patient can continue to receive treatment while on convalescent leave under the care of a private physician. In numerous cases the writers have been able to replace shock therapy with reserpine in those patients who failed to respond to shock therapy, and the patients adjusted so well that they were able to leave the hospital on convalescent leave.

Because of improvement of mental status, most of the patients treated with reserpine are eating and resting better and showed considerable gain in weight. Hence reserpine might aid indirectly in the treatment of pulmonary tuberculosis. S. J. SHANE

Analgesic Properties of Mixtures of Chlorpromazine With Morphine and Meperidine.

G. L. JACKSON AND D. A. SMITH: *Ann. Int. Med.*, 45: 640, 1956.

The analgesic effects of narcotics administered in association with chlorpromazine have been reported by several investigators. These effects were tested by the double-blind technique, the analgesic properties of various doses of morphine sulfate, meperidine hydrochloride, chlorpromazine, and mixtures containing chlorpromazine and morphine or meperidine being observed in 211 postoperative patients.

The results indicate that chlorpromazine itself is a mild analgesic. In a single dose of 10 to 20 mg., relief of pain was observed in approximately 60% of patients for periods of well over 2 hours. Morphine sulfate in a dose of 2.5 mg. alleviated pain in 46% of patients for approximately 1¾ hours. The addition of 10 to 20 mg. of chlorpromazine to 2.5 mg. of morphine sulfate produced relief of pain in about 75% of patients for 2½ to 3½ hours. This should be compared with morphine sulfate in a dose of 10 mg., which relieved pain in 80% of patients for almost 3 hours. Previous administration of chlorpromazine augmented the analgesic properties of morphine and certain combinations of morphine with chlorpromazine. Chlorpromazine in doses of 10 or 20 mg. in combination with meperidine in doses of 25 mg. produces relief of pain comparable to the effect of meperidine in doses of 75 mg.

S. J. SHANE

Pilot Study of Cycloserine Toxicity.

Am. Rev. Tuberc., 74: 196, 1956.

A control study on the toxic effects of cycloserine was conducted by the U.S.P.H.S. in six hospitals on 141 tuberculous patients in such a way that neither patients nor physicians knew whether a particular patient was receiving drug or a placebo. Most of the patients had far advanced and cavitary pulmonary tuberculosis and were in very poor condition despite extensive previous chemotherapy.

The cycloserine regimens investigated were 0.5 g. twice a day, 1.0 g. in a single dose every second day, 0.5 g. daily in a single dose, and 0.25 g. twice a day. Neurological and cerebrospinal fluid examinations were made before and after a 12-week course of treatment. In three hospitals, electroencephalograms were also made at the beginning and end of the observation period. The patients were examined daily for psychic and neurological changes. Reports on clinical, bacteriological, and roentgenographic status were made monthly.

During the 12-week course, toxic reactions severe enough to necessitate departure from the assigned regimen occurred in 18 patients who received cycloserine, and in none of the placebo patients. Eight patients had convulsions; two, mental disorders; three, motor disorders; one, somnolence; three, dizziness; and one, fever and chills. Toxic reactions occurred on three of the four cycloserine regimens, in 11 of the 25 patients who received 0.5 g. twice a day, in five of the 39 who received 1.0 g. every second day, and in two of the 38 patients who received 0.5 g. once a day.

Although the assigned cycloserine regimen had to be discontinued for 18 patients during the first 34 days of treatment, none of those who passed the 34th day without incident developed toxic reactions during the remainder of the 12-week treatment period.

No systematic increase in cerebrospinal fluid protein was noted in relation to either treatment with cycloserine or toxic reactions to the drug. Electroencephalograms did not prove useful in identifying before treatment the patients who subsequently developed toxic reactions, nor did they reveal residual damage after the occurrence of the toxic reactions. The neurological examinations did not reveal any consistent pattern of abnormalities.

While the roentgenograms of the cycloserine patients did not reveal striking improvement during treatment, comparison with the roentgenograms of patients who received the placebo indicated that cycloserine apparently prevented further deterioration. However, this limited therapeutic effect was observed only on regimens which produced toxic reactions. Bacteriologically, cycloserine appeared more definitely effective; infectiousness was reversed in 30 (45%) of 66 cycloserine patients and in only four (21%) of 19 placebo patients.

Cycloserine produced serious toxic reactions in 18 of 115 patients. It possessed a measure of therapeutic effectiveness as indicated by absence of roentgeno-

graphic deterioration and by a moderately high bacteriological conversion rate. The excellence of other available antimicrobial combinations and the toxicity of cycloserine will probably preclude its use for initial treatment. However, its usefulness in small doses, either alone or in combined therapy, for patients who have failed to respond adequately to combinations of isoniazid, streptomycin and PAS must be determined by further trials. S. J. SHANE

Human Adrenal Cortical Deficiency: Replacement Therapy with Cortisone.

A. G. HILLS, H. A. ZINTEL AND D. W. PARSONS: *Am. J. Med.*, 21: 358, 1956.

The results of a five-year study of 44 patients subjected to adrenalectomy (total or subtotal) are presented together with observations of nine patients in whom Addison's disease occurred spontaneously. Cortisone, often but not always supplemented by a small quantity of desoxycorticosterone, was given as replacement therapy.

Steroid therapy is indispensable for the survival of persons who have been subjected to total adrenalectomy, but some patients with spontaneous Addison's disease and some persons after subtotal adrenalectomy can survive and maintain well-being without it under ordinary circumstances. Such patients apparently enjoy a nearly normal basal rate of adrenal cortical secretion. The survival value of this secretion can be estimated in very crude quantitative terms as corresponding to the average amount of exogenous steroid which will ordinarily just maintain a man after total adrenalectomy in good general health (that is, on the average, assuming adequate salt intake, about 30 mg. of oral cortisone acetate daily supplemented by 1 mg. of buccal desoxycorticosterone acetate).

Few patients with Addison's disease are totally destitute of endogenous adrenal cortical secretion. Approximately 5% of the total amount of adrenal cortical tissue normally present will produce enough secretion to sustain life under ordinary circumstances. This quantity of surviving tissue has, however, practically no capacity to increase its basal hormone output, and a patient without ample cortical reserve is imperilled by any stress unless exogenous hormone can then be supplied.

Cortisone can maintain the life of totally adrenal-deficient persons indefinitely and can completely restore strength and well-being, *but it does not provide an entirely balanced replacement* for the missing adrenal cortical secretion of which cortisone and hydrocortisone are only partial constituents. There is no truly "physiologic" quantity of cortisone; that is, there is no dose of cortisone which, on long-term administration to adrenal-deficient patients with or without a small supplement of desoxycorticosterone, will not be accompanied by certain signs of hypoadrenalism or certain manifestations of hypercortisonism or both. The signs of hypoadrenalism commonly encountered in such patients are melanosis, impairment of water diuresis, unresponsiveness to hypoglycæmia, and sometimes salt-waste, azotæmia and hyperkalæmia. The signs of hypercortisonism are polyphagia, weight gain and impairment of glucose tolerance.

In no fundamental respect, either in kind or in degree, can any distinction be drawn between spontaneous and iatrogenic primary adrenal cortical deficiency. The incidence of melanosis has been strikingly lower in patients rendered adrenal-deficient by surgery than in persons with spontaneous Addison's disease, but this difference is probably ascribable to the provision of cortisone to the former group from the time of origin of the adrenal-deficient state. However, although cortisone has antipigmentary properties in adrenal-deficient persons, the adrenal cortex must contain antipigmentary factors other than cortisone and hydrocortisone.

Clinically detectable regeneration of adrenal cortical tissue occurred only once in a series of 27 patients subjected to subtotal adrenal resection. S. J. SHANE

Effects of Œstrogen Therapy on Hormonal Functions and Serum Lipids in Men with Coronary Atherosclerosis.

R. W. ROBINSON *et al.*: *Circulation*, 14: 365, 1956.

In this study it was found that œstrogens change the serum lipid patterns of survivors of myocardial infarction, causing a decrease in total cholesterol (C), an increase in phospholipid (P), and an increase in α-lipoprotein cholesterol. Consequently, the C/P ratio and the β-/α-lipoprotein cholesterol ratio fall. In general, these changes were seen as early as one month, were more pronounced at three months, and were maintained thereafter.

Total urinary 17-ketosteroid excretion was not significantly depressed by œstrogens; 11-oxygenated ketosteroids were not decreased. Androsterone and etiocholanolone were substantially decreased, presumably because of depressed testicular function. There was a consistent rise in dehydroisoandrosterone excretion.

Sexual potency gradually decreased and became absent on 10 mg. of Premarin daily. Testicular biopsies showed fibrosis of tubular cells and severe atrophy or complete absence of Leydig cells at one year. Thyroid function, as measured by I^{131} uptake, was not altered by 10 mg. of Premarin daily for one year. The observed serum lipid changes could not, therefore, be ascribed to increased thyroid function.

Œstrogen therapy of coronary atherosclerosis should still be regarded as an experimental approach to this problem, and it would appear that, so far, "the treatment is worse than the disease". S. J. SHANE

Buccal and Intramuscular Trypsin in Respiratory Tract Infection

I. INNERFIELD, I. S. SHINER AND E. V. DUANY: *J. Thoracic Surg.*, 32: 372, 1956.

During the past few years, reports have been published describing the favourable effects of various enzyme preparations on lesions in which thick, tenacious, purulent or mucopurulent exudates constitute an obstacle to healing. Among these enzyme preparations, trypsin has been most popular and has been used chiefly by aerosol inhalation and intramuscular injection. In this study, clinical observations are described which document the efficacy of trypsin tablets given *buccally*, combined with intramuscular trypsin (Parenzyme), in rapidly controlling the signs and symptoms of respiratory infection.

Forty-three patients participated in this study, and all suffered from inflammatory disease of the respiratory tract associated with viscid sticky secretions. Parenzyme, a suspension of crystalline trypsin in sesame oil, was given once daily in 0.5 c.c. intramuscular doses containing 2.5 mg. of trypsin. In addition, buccal trypsin, containing 2.5 mg. crystalline trypsin, was administered every three, four or six hours, for periods varying from three days to 25 weeks. During the first week of treatment Parenzyme and buccal tablets were used concomitantly. For maintenance, only buccal tablets were used. The only significant undesirable side-effect was soreness of the mouth in two patients.

In general, it was noted that the sputum became thinner, more abundant and easier to raise, while the cough became looser and more productive. There was also evidence to indicate that granulation was accelerated in bronchial ulcerations and bronchopleural fistulous tracts. In chronically ill patients, there were weight gain, improved appetite, improved sleep, and a sense of well-being. It was also noted that, in acutely ill patients, there was rather rapid resolution of inflammation, with early subsidence of cough and substernal burning.

The authors conclude that buccally and intramuscularly administered trypsin adequately corrects fundamental proteolytic enzyme-protein substrate abnormalities in infections of the respiratory tract, and that,

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as a direct consequence, there is a significant decrease in the viscosity and tenacity of respiratory secretions.

S. J. SHANE

PUBLIC HEALTH

Cardiovascular Diseases and Public Health.

J. W. FERREE: *Pub. Health Rep.*, 71: 115, 1956.

In this article cardiovascular disease problems are considered from the point of view of public health responsibility. The author shows how the American Heart Association and federal, state, and local health organizations work together to further research, community service, and education in the cardiovascular diseases.

Organized effort to collect and apply information on heart disease, first made in New York in 1916, has expanded rapidly in scope and function. Today the American Heart Association is a voluntary health agency with national headquarters in New York and with 56 direct affiliates and more than 350 local chapters. Its triple program of research, community service and education is guided by three councils, each directly responsible to the board of directors of the association.

Since its inception as a voluntary health agency in 1948 this association, its affiliates and chapters, have allocated approximately $13 million for research support. This includes research fellowships, established investigatorships and career investigatorships. Active participation in these research programs can be taken by only a few hundred people.

The community service program, on the other hand, is entered into by thousands of men and women, physicians and laymen alike. It varies with the community. The actual work is in the hands of the local heart association, which maintains a working relationship with other voluntary and official health agencies. The scope of a typical community service is discussed under the following: clinics, rheumatic fever program, rehabilitation program, nutrition program and chronic illness.

The educational efforts are in two categories: programs directed at physicians and other professional groups, and programs directed at the general public and special lay groups (parents, patients, workers). Meetings have been held for groups of clergymen, teachers, social workers, dietitians and others to discuss the needs of the cardiac in relation to their particular profession. A number of heart associations conduct special industrial education programs to tell both workers and employers the "cardiac can work" story. The value of this public education program in contributing to a rational understanding of heart disease, and thereby promoting optimism and confidence, is recognized.

Reference is made also to the importance of the relation between the heart association and the health department and to their respective roles in prevention and control of cardiovascular diseases through organized community effort. "Official agencies are legally charged with the responsibility of protecting the public's health. Heart associations have voluntarily assumed a share in this responsibility and should work closely with official agencies toward their common goal."

MARGARET H. WILTON

Assay of Tuberculous Contamination on Eating Utensils of Patients with Tubercle Bacilli in the Sputum.

L. J. GRIFFITH AND S. A. DENARO: *Am. Rev. Tuberc.*, 74: 462, 1956.

The practice of careful isolation techniques is the goal of all workers concerned with the treatment and care of tuberculous patients. This is especially true of those persons concerned with the handling of contaminated eating utensils. The purpose of this investigation was to determine how much contamination existed on utensils used by tuberculous patients.

Only the utensils from patients with positive cultures for tubercle bacilli were used in this study, and the fork was the only utensil investigated, because it is used by all patients during meals. The presumably contaminated forks were collected individually from the wards after the patients had eaten the noon meal. The forks were placed in a large 1½" by 5" centrifuge tube, containing 30 ml. of a one-fifth saturated aqueous solution of trisodium phosphate. The utensils were agitated and washed until all food material was removed. All of the tubes were stoppered with slip-on stoppers immediately after the specimens were collected. The specimens were then delivered to the laboratory and concentrated by centrifugation for 20 minutes at 3,000 r.p.m. The supernatant was discarded and the sediment neutralized with N/10 HCl employing phenol-red indicator. One hundred units of penicillin per ml. were added at this stage to control contamination. After 15 minutes' incubation at room temperature, the sediment was planted on to three tubes of Löwenstein-Jensen medium. The cultures were incubated at 37° C. for eight weeks. All cultures were read once a week in order to observe the first growth.

A total of 304 specimens was collected and treated in the manner described above. Of these specimens, 41 (13.1%) yielded cultures with the colonial and morphological characteristics typical of tubercle bacilli.

These results demonstrate clearly that care should be taken in handling the contaminated utensils of tuberculous patients. The degree of contamination indicated by this investigation represents a significant public health danger that can be controlled by boiling or otherwise sterilizing the utensils under appropriate conditions.

S. J. SHANE

INDUSTRIAL MEDICINE

Carcinoma of the Lung in Workmen in the Bichromates-Producing Industry in Great Britain.

P. L. BIDSTRUP AND R. A. M. CASE: *Brit. J. Indust. Med.*, 13: 260, 1956.

That carcinoma of the lung must be considered as an occupational hazard in the chromates-producing industry in Great Britain is indicated by this article in which the results of an investigation in progress at three factories for about six years are presented. The statistically significant increase in mortality from this cause is in accord with the findings of various authors who have studied the health hazards in this industry in Germany and in the United States.

The mortality experience of 723 persons was followed from November 1, 1949, until August 31, 1955. Fifty-nine men are known to have died. In 12 cases the assigned cause of death was carcinoma of the lung. The diagnosis was confirmed by necropsy in four cases and by histological examination of bronchoscopy specimens in three; in the other five it was made on clinical and radiographic findings. In addition three more cases were reported, two of whom are still alive. Of the remaining deaths, nine were ascribed to neoplasms at sites other than the lung and 38 to other causes.

Details are given of the method and results of the statistical analysis adopted. According to it only 3.3 deaths were expected from carcinoma of the lung. The ratio between the mortality found and that expected is 360%. Among the chromate workers taking part in the investigation the mortality experience from neoplasms at other sites and from deaths from other causes does not show any statistically significant difference from the mortality expected in a comparable section of the general population of England and Wales. Consideration is given therefore to the possibility that the increase in mortality from carcinoma of the lung could be due to a non-occupational cause such as diagnostic bias, place of residence, social class or smoking habits. After examination and discussion all these factors are discarded. The increase, therefore, must be attributed to some factor associated with occupational environment. The data examined did not allow the authors to form any opinion about the nature of the carcinogenic occupational factor.

MARGARET H. WILTON

FORTHCOMING MEETINGS

CANADA

COLLEGE OF GENERAL PRACTICE OF CANADA, First Annual Scientific Convention, Montreal, Quebec. (Dr. J. Y. Tremblay, 3244 Beaubien, Montreal, Que.) March 4-6, 1957.

CANADIAN SOCIETY OF MICROBIOLOGISTS, Annual Meeting, London, Ontario. (Professor J. A. Carpenter, Department of Bacteriology, Ontario Agricultural College, Guelph, Ont.) June 10-12, 1957.

CANADIAN MEDICAL ASSOCIATION, 90th Annual Meeting, Edmonton, Alberta. (Dr. A. D. Kelly, General Secretary, 150 St. George Street, Toronto 5, Ontario.) June 17-21, 1957.

CANADIAN OTOLARYNGOLOGICAL SOCIETY (SOCIÉTÉ CANADIENNE D'OTOLARYNGOLOGIE), Annual Meeting, Banff Springs Hotel, Banff, Alta. (Dr. G. A. Henry, Secretary, 328 Medical Arts Bldg., Toronto, Ont.) June 17-19, 1957.

NINTH INTERNATIONAL CONGRESS OF RHEUMATIC DISEASES, Toronto, Ontario. (Ninth International Congress of Rheumatic Diseases, P.O. Box 237, Terminal "A", Toronto, Ont.) June 23-28, 1957.

UNITED STATES

INTERNATIONAL ANÆSTHESIA RESEARCH SOCIETY, Phoenix, Arizona. (Dr. A. William Friend, 13951 Terrace Road, Cleveland 12, Ohio.) April 1-4, 1957.

PAN AMERICAN ASSOCIATION OF OPHTHALMOLOGY, Fourth Interim Congress, in conjunction with National Society for the Prevention of Blindness, New York, N.Y. (Dr. Frank H. Constantine, 30 West 59th Street, New York 19, New York.) April 7-10, 1957.

FIRST PAN AMERICAN CANCER CYTOLOGY CONGRESS, Miami, Florida. (Dr. J. Ernest Ayre, 1155 N.W. 14th Street, Miami, Florida; or Mrs. Elizabeth Maselli, Corresponding Secretary, P.O. Box 633, Coral Gables, Florida.) April 25-29, 1957.

NATIONAL TUBERCULOSIS ASSOCIATION, Kansas City, Missouri. (National Tuberculosis Association, 1790 Broadway, New York 19, N.Y.) May 6-9, 1957.

OTHER COUNTRIES

INTERNATIONAL COLLEGE OF SURGEONS, 10th Biennial International Scientific Congress, Mexico, D.F., Mexico. (Dr. Max Thorek, International Secretary General, International College of Surgeons, 850 W. Irving Park Road, Chicago 13, Illinois.) February 24-28, 1957.

ANNUAL HEALTH CONGRESS, Folkestone, Kent, England. (Secretary, Royal Society for the Promotion of Health, 90 Buckingham Palace Road, London, S.W.1, England.) April 30-May 3, 1957.

HARVEY TERCENTENARY CONGRESS 1957, London, England. (Secretariat, Royal College of Surgeons, 11 Chandos Street, Cavendish Square, London, W. 1, England.) June 3-7, 1957.

TENTH INTERNATIONAL HOSPITAL CONGRESS, Lisbon, Portugal. (Captain J. E. Stone, Secretary General, 10 Old Jewry, London, E.C. 2, England.) June 3-7, 1957.

FIFTH INTERNATIONAL CONGRESS OF THERAPEUTICS, Utrecht, Netherlands. (Dr. F. A. Nelemens, Secretary General, Bureau provisoire: Vondellaan 6, Utrecht, Netherlands.) June 5-7, 1957.

TWELFTH INTERNATIONAL CONGRESS ON OCCUPATIONAL HEALTH, Helsinki, Finland. (The Congress, Työterveyslaitos, Haartmanikatu 1, Helsinki-Tööiö, Finland.) July 1-6, 1957.

INTERNATIONAL SOCIETY OF CLINICAL PATHOLOGY, Fourth Congress, Brussels, Belgium. (Professor M. Welsch, Secretary-General, Service de Bactériologie et de Parasitologie, Université de Liège, 32 Blvd. de la Constitution, Liège, Belgium. July 7-14, 1957.

PROVINCIAL NEWS

ALBERTA

As a result of the investigations of the Cardiac Surgery Committee of the Calgary and District Medical Society, a Calgary Cardiac Assessment Committee has been set up. The function of this committee is to investigate cases referred to it, both for confirming the diagnosis and for determining their suitability for local surgery or for referral to an established cardiac centre, such as that which has been operating at the University of Alberta Hospital since November 1953.

The membership of the committee is: Dr. John C. Morgan and Dr. Lawther Logan, cardiologists; one of the following surgeons—Drs. R. H. Walker, G. E. Miller, and W. J. MacDonald; and Dr. S. B. Thorson, internist, along with the Chief of the Medical Service in the particular hospital in which the committee is working at the time. Following the activities of the committee, several cases have been operated on locally and a better service is offered to the residents of the district.

Dr. C. R. Bunn, Red Deer, has returned from a tour around the world sponsored by the International College of Surgeons. Eighteen doctors, with their wives, made the trip; three were from Canada, the remainder from the United States. Travel was by air and major stops were made at Honolulu, Tokyo, Formosa, Hong Kong, Manila, Bangkok, Calcutta, Delhi, Bombay, Karachi, Teheran, Istanbul and Athens, where the party broke up. Elapsed time from Los Angeles to Athens was six weeks. Clinical demonstrations, sightseeing and entertainment were arranged at each stop by the local chapter of the International College.

Dr. D. Cooper Johnston, lecturer in orthopædics at the University of Alberta, has become a Fellow of the Royal College of Surgeons of Canada.

Dr. Harvey Hebb, Edmonton, has been promoted to the rank of acting Surgeon Commander in the RCN(R).

Dr. Walter C. MacKenzie, professor of surgery at the University of Alberta, and Dr. R. MacGregor Parsons, Red Deer, are on a four-week Caribbean cruise sponsored by the American College of Surgeons. Scientific sessions are held each morning and both men are on the program. Dr. MacKenzie is a member of the Board of Regents of the College.

Dr. Alan Hepburn has opened an office in Calgary for the practice of neurosurgery. This brings to six the neurosurgeons in Alberta, with three each in Calgary and Edmonton.

Dr. John Morgan has joined the staff of the Calgary Associate Clinic where he will practise cardiology.

Dr. Lawther Logan has opened an office in Calgary for the practice of cardiology. W. B. PARSONS

SASKATCHEWAN

In a brief presented to the recent Provincial Local Government Conference held in Regina, the Saskatchewan Hospital Association said that one-third of Saskatchewan's population is not carrying its share in supporting the Province's hospitals.

The brief presented by Mr. E. F. Bourassa, S.H.A. President, said:

"Two out of every three of us support directly about 70% of the hospital beds in the province, while the

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remaining 30% receive no support and one-third of our population is not carrying its share of the burden."

While noting that a great improvement has taken place in the finances of hospitals in Saskatchewan since the start of the Provincial Hospital Plan, the brief intimated that it was still urgent to find an early solution to what was called "the hospital cost problem". A rapid increase in construction costs had largely offset the contribution from provincial and federal grants, leaving the burden on the local community relatively as great as before. The Association, however, said the initiative for general hospital construction, generally speaking, has always rested and still rests with the local community.

The brief continued, "The principle of local hospital autonomy is one to which the hospitals in this province rightfully cling to very dearly and while the people who operate these hospitals appreciate all the help, the guidance, and the counselling offered by the staff of the provincial government, there is a very real danger that a gradual increase of advice can eventually become a command. When this happens our hospitals will have lost their institutional independence."

The Association said that, except for the new University Hospital in Saskatoon, Saskatchewan's hospitals generally can be divided into two main groups: (1) hospitals which have access to the property tax dollar—union and municipal hospitals; (2) hospitals without property tax sources of revenue—privately owned and community hospitals. While the second group formed less than 20% of the total number of hospitals in the province, their walls contained more than 30% of the total number of hospital beds.

The Association added that 66.1% of the population lives in areas which support union and municipal hospitals and therefore have contributed or are contributing towards the financing of at least some of the hospitals through direct taxation while 33.9% live outside these areas "and therefore contribute not one red cent through direct taxation".

According to the latest available figures, 70% of the taxable assessment of the province was contained within areas which contributed or had contributed to the capital cost of hospitals through property taxes. The remaining 30% was outside these areas.

The S.H.A. also stressed a need for fewer and better-prepared hospital trustees and suggested that the method of appointing trustees may be out of date. "How can we reasonably expect a man whose closest contact with a hospital has been to visit a relative or a friend on occasion, a man who has last month been elected to a municipal council and who at the first meeting of council in January, when the finance, the roadwork and all other committees have been appointed, will be asked to represent council on the hospital board for the coming year, to make the best board member?" the brief asked.

Advances in medicine and increased demands on ever-expanding hospital facilities made it imperative that hospital trustees possess some knowledge and interest in public health affairs. A hospital trustee should be a leader who has the confidence of his fellow-citizens. More is required of modern stewardship than attendance at occasional meetings.

In another brief submitted by the Inter-Region Committee on behalf of the organized health regions in part, the following suggestions were made:

1. Regional health organizations should be extended throughout the province and the regional board of health should be given increased responsibility in public health matters.

2. Regional boards should continue to have responsibility for establishing rates and methods of taxation within their boundaries, and should continue to have the responsibility for planning and administering medical care programs on behalf of the residents of their area.

3. Conditions of service for public health personnel should be improved in order to attract staff.

4. It should be acknowleged that regional boards are responsible for all aspects of health—preventive, curative, rehabilitative—and that they should take an active part in promoting such services.

According to the submission, rural health regions most efficiently served population areas of approximately 50,000 people—small enough to encourage local participation in guidance and administrative programs, and sufficiently large to permit employment of a requisite number of full-time, qualified staff.

Provincial and local governments were urged to make all necessary efforts to inaugurate health regions in unorganized areas to provide primary public health services integrating activities in both preventive and curative fields.

The brief backed prepaid medical care and endorsed the Swift Current tax-supported program—"the only medical care insurance venture in North America on the regional basis to cover all residents of a given area." The board stated 10 years of operation had demonstrated that such a scheme proved satisfactory to both local physicians and beneficiaries in budgeting costs of unpredictable medical care.

Expenditures on public health in the Province of Saskatchewan between 1943 and 1956 by senior governments has risen eight times faster than those by local governments. The Department of Public Health noted that expenditures of the provincial hospital services plan rose from $7,500,000 in 1947 to over $19,000,000 last year. Expenditures on medical care for public assistance recipients rose from $700,000 in 1945-46 to $1,261,000 in 1955-56. Expenditures for the physical restoration service, established in 1952, exceeded $180,000 in the period 1955-56.

Under the regional health services plan it was suggested that "apathy of many regional boards on matters pertaining to public health" existed. The regional boards, it was intimated, have played a passive role as far as preventive and promotional services are concerned.

The present division of authority is "not quite satisfactory because preventive and promotional services are initiated by the public health minister with the advice of the boards, but treatment services are initiated by the board with the approval of the minister."

Total registration for all types of 1956-57 classes at the University of Saskatchewan and its junior colleges shows an increase of approximately 10% over registration figures for the previous year. On the campus proper the number of degree students registered for the present university term is up—markedly so in some cases—in every college except graduate studies, when compared to the previous year. These increases are indicative of the growing enrolment pressure to which this university is being subjected, in common with all others across Canada.

A one-day conference was held in Saskatoon at the Bessborough Hotel on Friday, December 7, by the local committee on chemical tests for intoxication. The guest speaker for the evening program was Dr. C. W. Muehlberger, toxicologist, Michigan State Department of Health, who spoke on "Medico-legal aspects of alcohol intoxication".

Among those invited were representatives of the provincial government, chief justices of the Court of Queen's Bench, district court judges, police magistrates, and representatives of the Bar Association and the medical profession, together with police administrative officers.

Directors of the Saskatchewan Heart Foundation at a recent meeting decided to join in the national campaign plan for February 1957. It was reported that to date more than $1,700 had been received in voluntary gifts, although the Foundation had been incorporated only recently in the province. The keynote of the meeting was the great and urgent need to provide support re-

quired to carry on and complete research projects already started in this province in connection with diagnosis, treatment and preventive measures of the various forms of heart diseases.

Bow ties have been issued to members of the staff of the Saskatchewan Hospital at Weyburn, to provide some distinguishing means of identification, similar to the cap ribbons worn by the female members of the nursing staff. A maroon tie indicates a S.P.N.A. graduate; a maroon and gold tie a graduate; a purple tie a third-year student; a gold tie a second-year student; all other staff members have a black tie. The first-year students at capping time will receive blue ties.

At the annual Christmas medical staff meeting of St. Paul's Hospital, Saskatoon, Dr. D. M. Baltzan gave an address on his recent trip to Russia. This was most interesting and greatly enjoyed.

For the coming year Dr. F. W. Rosher was named as president, Dr. S. Worobetz as vice-president and Dr. H. M. Collins as secretary, with Drs. A. E. Buckwold, J. E. Leddy and H. Sugarman named to the executive of the staff.

The Saskatchewan Chapter of the College of General Practice of Canada is planning to hold a three-day scientific session on April 18, 19 and 20, 1957, in the Hotel Saskatchewan, Regina.

The Leukemia Society Inc. of New York will give the University of Saskatchewan $9,250 over a two-year period in support of research under Dr. Rudolph Altschul, professor and head of the Department of Anatomy in the College of Medicine. G. W. PEACOCK

MANITOBA

Judge John Milton George, Q.C., of Morden, Manitoba, received a Citation of Accomplishment from the American Hospital Association at a dinner on December 14 in Chicago marking the end of his term as a commissioner of the Joint Commission on Accreditation of Hospitals.

The Citation of Accomplishment, which was voted by the Association's Board of Trustees, noted that Judge George had been a commissioner since the establishment of the accrediting body in 1952. It praised him for having "served with distinction in the development of this voluntary program for the improvement of patient care" and for "his many other activities in the public behalf".

ONTARIO

The Toronto Western Hospital launched its Building Fund on January 28 for the purpose of raising $4,510,000 for improvement and expansion of this 60-year-old hospital. Dr. R. C. Laird, Chief Surgeon of the Toronto Western Hospital, heads the Doctors' Committee and Miss Gladys Sharpe, R.N., Director of Nursing, heads the Nurses' Committee for the Fund. It is interesting to note that this hospital has grown from a ten-bed free dispensary in 1896 to its present vast size. As a teaching hospital affiliated with the medical school of the University of Toronto, the Western Hospital helps to train between 350 and 400 medical students each year. Its school of nursing annually graduates 80 nurses. The present capacity is 700 beds and 113 bassinets, and present needs are for an enlarged and modernized emergency department with new ambulance and main entrances, an improved rehabilitation department, medical and clinical teaching rooms, more beds for orthopædic and surgical cases, an outpatient extension, a special section for a cobalt bomb, a tumour clinic, new operating rooms for orthopædic surgery and cardiovascular surgery, and new laboratories. There is also urgent need for an addition to the nurses' residence and the interns' residence.

The Toronto East General Hospital announces that its Superintendent, Mr. William E. Leonard, who has given 16 years of devoted service, is resigning on account of ill-health. He will be succeeded by Mr. Eric R. Willcocks, who has already filled the posts of Accountant, Assistant Superintendent and Acting Superintendent of the Hospital.

QUEBEC

The fifth C. C. Birchard Memorial Lecture for 1956 was presented by Dr. William B. Bean on December 7 in the Auditorium of the Queen Mary Veterans Hospital, Montreal. These annual lectures, under sponsorship of the Montreal Medico-Chirurgical Society, are endowed by the Sun Life Assurance Company of Canada in memory of their Chief Medical Officer. Dr. Bean is Professor of Medicine and Head of the Department of Medicine at the State University of Iowa College of Medicine. He spoke on "commonplace lessons from rare disease". This was a most memorable lecture, confirming our view of Dr. Bean as an outstanding speaker and lecturer, a man of wide knowledge of the classics and literature in general and a man with a keen sense of humour.

Msgr. Irenée, rector of the University of Montreal, has announced that the University has been awarded a grant of $75,000 by the Kellogg Foundation of Battle Creek, Michigan. The grant, payable over a period of five years, is for the university's newly established Institute of Hospital Administration, headed by Dr. Gerard LaSalle.

Mr. R. E. Powell, general chairman of the McGill Building Fund campaign, has announced that the fund drive more than met its $6,000,000 objective. The Province of Quebec granted $1,500,000 towards the fund. This money was raised for five construction projects, including expansion of the medical, engineering, science and commerce buildings.

The monthly luncheon meeting of the Neoplastic Diseases (Oncology) Section of the Montreal Medico-Chirurgical Society was held on December 17 at the Queen Mary Veterans Hospital. The scientific part of the program was a symposium on multiple myeloma in which Dr. J. R. Martin described experiences with 58 patients, Dr. L. Shapiro spoke on hæmatological findings and treatment, Dr. G. W. Halpenny presented a case complicated by hypercholesterolæmia and xanthomatosis, Dr. E. G. Coulson described radiological findings, and Dr. A. H. Neufeld presented biochemical findings and speculated on possible etiological bases of this disease.

On December 27 a group of Canadian tuberculosis specialists left Montreal Airport for a six-week tour of India. The group consisted of Dr. Armand Frappier, director of the University of Montreal's Institute of Microbiology and Hygiene and professor of bacteriology, Dr. G. J. Wherrett, executive secretary of the Canadian Tuberculosis Association, Dr. H. E. Burke, medical director of the Royal Edward Laurentian Hospital in Montreal, and Dr. C. G. Shaver, superintendent of the Niagara Peninsula Sanatorium, St. Catharines, Ont. They will attend the biennial conference of the International Union Against Tuberculosis in New Delhi and stay on for six weeks as a medical teaching team. This visit is part of Canada's Colombo Plan contribution and is under the leadership of Dr. Wilder Penfield, director of the Montreal Neurological Institute.

Tuberculosis is India's second health problem, with nutrition in first place and malaria in third position. Further Canadian medical teams to include experts in these and in related fields are scheduled to leave early in the New Year. A. H. NEUFELD

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NEW BRUNSWICK

Dr. Earl R. Lee, who previously practised at Black's Harbour, has been appointed staff radiologist at the Carleton Memorial Hospital at Woodstock, N.B. Dr. Lee has completed a three-year postgraduate course in radiology at the Royal Victoria Hospital, Montreal.

Dr. Robert C. Dickson, Professor of Medicine of Dalhousie University, has completed a "tour de force" through several centres in New Brunswick, speaking at Chatham on November 13 on "Differential Diagnosis of Diarrhœa" and "Hæmorrhage from the Upper Gastro-Intestinal Tract"; at Fredericton at noon, November 14, on "Dysphagia" and at Perth in the afternoon and evening on the same subjects discussed at Chatham; and at Saint John on November 15 on "Functional Disorders of the Gastro-intestinal Tract". Such a tight schedule must be considered as a test of endurance as well as a labour of love. Dr. Dickson's visit coincided with an early snowfall in the Maritimes; however, he was warmly welcomed.

The mine disaster at Springhill, N.S., proved again the value of good neighbours. Help from many parts of the Maritimes was provided quickly and the doctors of nearby New Brunswick points did their share. From Moncton neighbourhood Dr. J. W. Dobson, Dr. Geo. Gass, Dr. E. Barnhill, Dr. J. A. Fownes and Dr. G. V. Parsons served in the hospitals of Springhill, and at the pithead another group including Dr. C. E. Doyle, Dr. D. I. MacLellan, Dr. J. A. Delaney, Dr. J. A. Dobson and Dr. Peter Lyons performed various duties in the mine itself.

The following doctors in New Brunswick—all from the Moncton area—were recently certified by the Royal College: Dr. Peter Lyons in surgery; Dr. Ralph Fitch in pædiatrics; and Dr. Leigh Ramsey in otolaryngology. All are practising in Moncton.

Dr. G. F. W. Moore has been appointed surgeon in chief to the staff of the Hotel-Dieu Hospital at Perth, N.B.

The New Brunswick Association of Registered Nurses is now studying a report by Miss Edith Kathleen Russell, R.N., who last year did an exhaustive research assignment on the subject of nursing education in this province. The project was financed by a grant from the federal Department of Health and was conducted in the University of New Brunswick and sponsored by the Department of Health of New Brunswick. Much field work was completed. History of nursing in the province was summarized and recommendations for proposed changes in training of nurses and utilization of services of trained nurses were advanced. This was perhaps the first such research project on nursing in any one province, and was started or precipitated at the request of the Nursing Association in the province.

Dr. R. A. H. Mackeen, Director of Provincial Laboratories in New Brunswick, has been confined to hospital in Ottawa for some time. Dr. Mackeen became ill while on a business visit in the capital. His early return to the Maritimes is anticipated.

Dr. Henri Ellen-Berger addressed a meeting of the Saint John Medical Society in the lecture room of the Nurses Home at the General Hospital on December 13 on the subject of "New Approaches in Psychiatry".

A. S. KIRKLAND

PRINCE EDWARD ISLAND

At the regular monthly meeting of the Prince Edward Island Division, a very large audience heard two excellent papers from the Department of Postgraduate Education of Dalhousie University. Dr. Arthur L. Murphy, Assistant Professor of Surgery at Dalhousie University, spoke on "Pre-malignant and malignant lesions of the mouth". Dr. Gordon W. Bethune, Lecturer in Surgery at Dalhousie University, reviewed the experiences at the Victoria General Hospital with hypophysectomy in the treatment of carcinoma of the breast.

Among the recent additions to the membership of the Prince Edward Island Division is Dr. Harry Neil J. Boyd, who has recently joined the Department of Laboratories as assistant pathologist. He comes from Listowel, Ont., and graduated from the University of Western Ontario in 1947. He took extensive training at Ottawa, Calgary and at the Banting Institute, and recently received certification in pathology.

Among the successful candidates in the recent examinations for certification by the Royal College of Physicians and Surgeons were the following: John Hubert O'Hanley of the Charlottetown Clinic, in Pædiatrics; Malcolm Beck of the Department of Health and Welfare, in Psychiatry; Harry Neil J. Boyd of the Department of Laboratories, in Pathology.

The following physicians are members of the staff of the Department of Health, Province of Prince Edward Island: O. H. Curtis, M.D., C.M., D.P.H., Deputy Minister of Health and Chief Health Officer; B. D. Howatt, M.D., C.M., D.P.H., Health Officer; W. T. Hooper, M.D., C.M., Director, Division of Cancer Control; J. H. Shaw, M.D., C.M., D.P.H., Director, Division of Laboratories; H. Neil J. Boyd, M.D., C.M., Assistant Provincial Pathologist; A. J. Murchison, M.D., C.M., Director, Division of Mental Health, and Superintendent, Falconwood Hospital and Provincial Infirmary; John C. Theriault, M.D., C.M., Psychiatrist, Director of In-Patient Services, Division of Mental Health; A. A. MacVicar, M.D., C.M., Psychiatrist, Director of Outpatient Services, Division of Mental Health; M. N. Beck, M.D., C.M., Psychiatrist, Division of Mental Health; R. G. Forsythe, M.D., C.M., Psychiatrist, Division of Mental Health; P. A. Creelman, M.D., C.M., Director, Division of Tuberculosis Control; E. M. Found, M.D., C.M., Director, Outpatient Clinics, Division of Tuberculosis Control; W. R. Stewart, M.D., C.M., Assistant Medical Superintendent, Provincial Sanatorium, Division of Tuberculosis Control; L. E. Prowse, M.D., C.M., Director, Division of Venereal Disease Control (part-time).

The third annual meeting of the Maritime Division of the Canadian Psychiatric Association was held in Charlottetown on September 28 and 29, 1956.

A unique and very successful feature was the combining of an afternoon scientific session, dinner and dance with the regular monthly meeting of the P.E.I. Medical Society. In this session, subjects discussed included tranquillizing drugs and ECT, by Drs. Hirsch, Gregory, Hatfield and Black, and a symposium on the peptic ulcer problem, the panel consisting of Drs. J. H. Shaw (pathology), J. A. MacMillan (surgery), J. B. Downing (internal medicine) and R. J. Weil (psychiatry).

In the other scientific sessions the following papers were presented: Lobotomy Project in P.E.I.—Dr. A. J. Murchison; Psychiatry and the Law—Dr. R. O. Jones; Medical Economics—Dr. J. F. Nicholson; Utilization of Ward Personnel in Therapy—Dr. John Cumming.

At the luncheon meeting Dr. J. A. MacMillan spoke on present and future problems and trends in health insurance. At the joint dinner of the two groups Dr.

Frank MacKinnon spoke on psychiatry and political science.

Officers elected were: President, R. D. Nixon; Secretary, W. B. Black; Vice-president, R. D. Jones; Directors, R. D. Nixon (New Brunswick), S. Hirsch (Nova Scotia) and J. C. Theriault (Prince Edward Island).

J. A. McMILLAN

CANADIAN ARMED FORCES

Surgeon Lieutenant Commander W. C. Wood, R.C.N., has successfully completed the Canadian Hospital Extension Course in Hospital Organization and Management. He is now doing an internship in Internal Medicine at Westminster Hospital, London, Ontario.

The following candidates were successful, in the specialties shown, at the recent examinations for certification of the Royal College of Physicians and Surgeons of Canada: Major A. M. Davidson, General Surgery; Major L. Lavallée, General Surgery; Major H. W. Greenridge, Internal Medicine; Lt.-Col. W. H. R. Croskery, Internal Medicine; Major D. G. Guthrie, Radiology; Major T. C. Fort, Otorhinolaryngology; Major J. T. Baird, Ophthalmology; Major E. H. Anderson, Physical Medicine.

Medical officers who recently embarked for the Middle East as part of the U.N.E.F. are: Lt.-Col. J. S. Hitsman, Major W. A. Reed, Major R. N. Hetherington, Major A. M. Davidson, Captain V. A. McPherson, Captain J. A. McGregor, Captain J. F. Haley.

The following R.C.A.F. medical officers were successful in completing the 1956 examinations of the Royal College of Physicians and Surgeons (Canada): Squadron Leader G. J. Mack, Fellowship in Surgery; Group Captain G. D. Caldbick, Certification in Dermatology and Syphilology; Wing Commander G. H. Graham, Certification in Ophthalmology.

BOOK REVIEWS

JOURNAL OF NEUROCHEMISTRY. Vol. 1, No. 1. May 1956. Pergamon Press, London and New York.

This is the first number of a new journal—a quarterly journal devoted to the chemical aspects of the physiology, pharmacology, pathology, as well as the anatomy, of the nervous system. All biochemists and physiologists working in the general field of neurology are well aware of the increasing interest in the chemistry of the nervous system, an interest that has its root in an intense desire to learn more of the mechanisms of brain and nerve and to understand the relation of these to mind and behaviour. All branches of medicine that involve consideration of the nervous system are affected by neurochemical and neurophysical discoveries, and by the results of the many studies now being carried out on the effects of drugs on the nervous system. The numbers of publications on these subjects are increasing and are scattered at present in many journals. It seems appropriate, at this relatively early stage of neurochemical and neurophysiological investigations, to have a journal devoted to the description of such investigations. This should serve to make easier the task of the investigator to keep abreast of the relevant literature in the neurochemical field, to accelerate the rate of integration of biochemistry into the various fields of neurology and to make for a greater rate of progress in an important field of high biological and medical interest.

The first number contains papers (all in English) from London (Eng.), Edinburgh, Prague, Bethesda, Bari, Cardiff, Gothenburg, St. Louis, and Cambridge, Mass., a testimony to the international character of the journal. The articles deal with such subjects as the effects of chlorides on nerve metabolism, effects of reserpine on the noradrenaline concentration in the hypothalamus, the part played by the glutamate-glutamine system in rat brain during physical exercise, the occurrence and distribution of serotonin in the cerebral nervous system of vertebrates, the properties of sphingosine and those of acetalphospholipids in the nervous system, the estimation of cerebrosides and the enzymatic behaviour of mitochondria and other cell constituents in lobster and squid nerves.

Some of the most interesting papers in the number are those dealing with the quantitative histochemistry of the cerebral cortex by Eli Robins and his colleagues. Using remarkably sensitive techniques, that make it possible to estimate chemical and enzymatic tissue constituents in samples of tissue weighing less than 10 μg. (one-hundredth of a milligram), these investigators have found that the motor and visual cortices present different distribution patterns of the proteins and lipids in the cortical layers, the visual cortex containing about twice as many total cells (neurons and glia) as the motor cortex. The motor and visual cortices also present different patterns of distribution of six selected enzymes. Although the absolute levels of the enzymes investigated are similar (apart from ATP-ase) in the motor and visual cortices, there is a somewhat higher level of enzymatic activity in the inner layers of visual cortex as compared with that in the motor cortex, pointing possibly to a higher total energy metabolism in the visual than in the motor cortex. Such studies as these point to a development in histochemistry that few biochemists, only a short time ago, would have thought possible.

Most of the articles are of a high standard, and if this can be kept up, the *Journal of Neurochemistry* is assured of success and of a permanent place in the libraries of biochemical and physiological investigators.

PULMONARY CARCINOMA. Edited by E. Mayer, New York University Post-Graduate Medical School, and H. C. Maier, College of Physicians and Surgeons, Columbia University. 540 pp. Illust. New York University Press, New York; J. B. Lippincott Company, Philadelphia and Montreal, 1956. $15.00.

This is an excellent book from the first chapter on "Modern Concepts of Cancer Research" by Dr. C. P. Rhoads to the last chapter on "The Outlook for Cancer". The book is thorough, detailed and well arranged. No matter what the aspect of the disease about which the reader wishes more information, he will find a chapter dealing with it, well written and comprehensive.

The biology, pathology and environmental factors are covered in great detail. These chapters are followed by some on the various methods of diagnosis of lung cancer by clinical, bronchoscopic, radiological methods and by exfoliative cytology. A chapter is given to the search for the early case, in which it is pointed out that mass x-rays find comparatively few cases, partly because they cover a wide age range, and also because they include women, in whom lung cancer occurs less frequently than in men. Differential diagnosis is carefully dealt with and the functional aspect of pulmonary disease is considered.

The chapters on treatment contain details of surgery, radiotherapy, radioisotope therapy and chemotherapy. It is in the last-mentioned field that the authors feel future cure lies. The suggestions on medical management of the final stages are very useful, and the chapter on psychological aspects is thought-provoking.

The book has many good illustrations and is very readable, which cannot be said of many medical books.

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BIOCHEMISTRY OF THE EYE. Antoinette Pirie, Margaret Ogilvie's Reader in Ophthalmology, and Ruth van Heyningen, Nuffield Laboratory of Ophthalmology, Oxford University, England. 323 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $8.50.

Since the publication in 1934 of Krause's *Biochemistry of the Eye*, texts in this field have been lacking. Therefore with pleasure we can turn to this new book which, while not large, fulfils our expectations.

There are only a few headings: the lens, the cornea, vision, the vitreous body, the aqueous humour and nutritional disease. But each area is covered carefully and with understanding. The possible metabolic mechanisms in the lens are described. The evidence for each is marshalled and considered and the derangements which may take place as a result of cataract are detailed. The composition of the cornea and its dehydrated state are discussed. The metabolism of the cornea is described, as are the chemical changes which occur after injury. The chemistry of the visual pigments, particularly rhodopsin, is discussed, and the other pigments in the retina are considered. The over-all metabolism of the retina is outlined with some interesting comments on metabolism during poisoning and other abnormal circumstances. The content of the vitreous, changes when treated with enzymes, its relationship to the zonule and its tendency to swell are discussed. The content of the aqueous and the metabolism of the ciliary body are considered together. The final chapter, on deficiency diseases, discusses many of the chemical activities taking place in the eye.

This book is well worth reading. It should be of value to anyone taking more than a superficial interest in the eye. The index is adequate, the references are well chosen, the printing is clear, the paper is of low gloss and pleasant for reading.

PROCTOLOGY. H. E. Bacon, Professor of Proctology, Temple University School of Medicine, Philadelphia; S. T. Ross, President of the American Proctologic Society, and P. M. Recio, Assistant Professor of Surgery, College of Medicine, University of the Philippines. 441 pp. Illust. J. B. Lippincott Company, Philadelphia and Montreal, 1956. $10.00.

Proctology, by definition, deals with the management of disorders of the anus, rectum and colon. The subject is thoroughly dealt with by Dr. Bacon and his co-authors in this medium-sized book of 412 pages. Thirty chapters deal in order with essential anatomy, methods of examination, and the disorders of the various parts. The text is well illustrated and clearly subdivided, and there are many useful classifications and tables. The 29-page index is most adequate. The book is highly recommended as a reference manual generally, and to all who have any special interest in the field.

POSTURAL BACK PAIN. M. C. Cobey, Professor of Orthopedic Surgery, Georgetown University Medical School, Washington, D.C. 78 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $3.25.

This is a monograph of the American Lectures in Orthopedic Surgery which deals with the problem of pain in the back due to posture. The author goes into theory, physical examination, and the various syndromes at each level of the spine. According to his criteria, very accurate diagnoses can be made of postural disabilities. With an accurate diagnosis, adequate therapy can be instituted along the lines of rest and exercises and methods to relieve muscle spasm, back support, etc. The book as a whole is very informative, is easy to read, and while it would not be considered a "must" for every orthopædic surgeon, it would do him no harm to read it and it would certainly be of value to the general practitioner and general surgeon.

THE DIAGNOSIS AND TREATMENT OF POSTURAL DEFECTS. W. M. Phelps, Medical Director, Children's Rehabilitation Institute for Cerebral Palsy, Baltimore, R. J. H. Kiphuth, Professor of Physical Education, Yale University, and C. W. Goff, Associate Clinical Professor of Orthopedic Surgery, Yale University School of Medicine. 190 pp. Illust. 2nd ed. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $7.25.

This book, which is similar to the monograph on postural back pain by Milton C. Cobey, is written so as to be of value to the layman as well as to the physician and surgeon. It contains a combination of diagnoses and essential exercise mechanisms to treat and correct the various postural difficulties and defects. It is a well-written book and it would be extremely useful for those associated with athletics or the physical education of school children.

PERIPHERAL VASCULAR DISORDERS. Edited by P. Martin and others. 847 pp. Illust. E. & S. Livingstone Ltd., Edinburgh and London; The Macmillan Company of Canada Limited, Toronto, 1956. $19.00.

This fine British book of 847 pages is well bound, well illustrated, and well written. It deals extensively with the anatomy and physiology of the peripheral vascular system. There is an excellent section on the radiology of peripheral vascular disease, and the techniques of arteriography for various areas are described. The clinical features of these conditions are well dealt with and the recommended treatments are given. Those who are interested in diseases of the peripheral vessels will find this book an excellent addition to their libraries.

JOINT LIGAMENT RELAXATION TREATED BY FIBRO-OSSEOUS PROLIFERATION. G. S. Hackett, Consulting Surgeon, Mercy Hospital, Canton, Ohio. 97 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $5.25.

This is a very well written little monograph which covers the aspects of ligamentous disability, particularly in relation to the low back. The author explains in detail ligament relaxation and how it is a source of pain, particularly at its many bony insertions. The diagnosis is aided a great deal by the use of procaine infiltration at the many trigger points outlined. When the diagnosis is established, the author outlines treatment by the use of a proliferating solution injected at the trigger point. The product which Dr. Hackett has used is Sylnasol. His results seem to be better than average and bear careful consideration. It is an interesting little book to read but one must face the subject with a completely open mind.

PRAKTISCHE GASTROENTEROLOGIE (Practical Gastroenterology). E. Hafter. 380 pp. Illust. Georg Thieme Company, Stuttgart; Intercontinental Medical Book Corporation, New York, 1956. $11.40.

This practical manual presents in a concise way a good working basis in gastroenterology; it contains the latest universally accepted views and data, reviewed from world literature and international congress in gastroenterology. The methods of careful history-taking, examination, diagnostic procedures, laboratory tests and radiological studies are concisely and accurately described. Modern views on therapeutics and dietetics are well documented. The chapter on the acute abdomen, its diagnosis and treatment makes excellent reading.

The 148 illustrations reproduced in perfect technical photography add greatly to the understanding of the contents. The book fulfils entirely its purpose as a good guide for postgraduate students, general practitioners, radiologists and surgeons.

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Which child is being treated with old-fashioned nose drops? Which with 'VASOCORT'?

That's easy. The youngster on the right is being treated with 'Vasocort', the new concept of intranasal therapy.

Until the introduction of 'Vasocort', reduction of intranasal congestion and inflammation was usually achieved topically by vasoconstriction with potent pressor drugs—which all too often produce burning, stinging and rebound turgescence. These side effects are frequently even more unpleasant than the intranasal disorder itself.

'Vasocort', in contrast, owes much of its success in the treatment of children to its almost 100% lack of undesirable side effects. That is because of the extremely low concentrations of its anti-inflammatory agent (hydrocortisone) and of its *two* decongestants (phenylephrine and Paredrine*).

'Vasocort', which is rapidly replacing the traditional high-potency vasoconstrictor, has been administered over an extended period of time to children ranging from 9 months to 11 years. Results have been uniformly good.

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(Hydrocortisone
and 2 Decongestants)

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THE MANAGEMENT OF MENSTRUAL DISORDERS. C. F. Fluhmann, Clinical Professor of Obstetrics and Gynecology, Stanford University School of Medicine, San Francisco, Calif. 350 pp. Illust. W. B. Saunders Company, Philadelphia and London, 1956. $8.50.

A glance through the bibliography of this excellent treatise makes it obvious that Dr. Fluhmann has been a pioneer in the basic endocrinology of menstruation, with extensive experience in management of its disorders, particularly endometrial hyperplasia.

The book begins with a review of the hormones controlling the menstrual cycle. Their chemistry is described and their endocrine interplay well illustrated with line diagrams. Following this, the normal menstrual life of the woman is outlined and described according to age, and with reference to the physiological changes in the organs involved. Therefore the reader has a solid background of the normal from which to contemplate the abnormal.

The part of the book devoted to abnormal menstruation begins with a classification of menstrual disorders, based almost entirely on presenting symptoms. This is a good approach as it allocates each symptom a chapter, under which it is discussed from the point of view of etiology, pathology, diagnosis, and treatment. Thus this interesting book ranges far further afield than its modest title suggests.

Particularly to be commended is the chapter on endometrial hyperplasia, with a very full account of the pathology of the condition. In the author's experience its pre-cancerous nature is doubtful, even when occurring at the menopause. There is no mention of Hertig's work on carcinoma-in-situ of the endometrium.

On "low dosage irradiation" for amenorrhœa, Dr. Fluhmann is wisely conservative, maintaining that even the remotest possibility of mutation is enough to condemn this very empirical and uncontrolled treatment.

The chapter on secondary amenorrhœa is the least satisfactory. No mention is made of Wilkins's work on subclinical adrenal hyperplasia, and the cure of this amenorrhœa by the use of cortisone. This is the chapter that includes several rather vague speculations on hypothalamic pathology.

This book is practical, even to the point of suggesting almost ambulatory dilatation and curettage in order to save hospital costs. It is interesting to read and can be recommended as a solid conservative guide for family practitioner and specialist alike.

GREY TURNER'S MODERN OPERATIVE SURGERY. Vol. II. Edited by the late G. Grey Turner, University of London and Lambert Charles Rogers, University of Wales. 2614 pp. Illust. 4th ed. Cassell and Company Ltd., London, 1956. $12.75.

The previous edition of this standard work was published in 1943, and it has now been brought up to date. The chapter on hernia is very complete, although we were surprised to find that late ambulation is still practised. The chapter on operations of the rectum and anal canal is excellent, as one would expect from Naunton Morgan and Lloyd-Davies.

The chapter on radiotherapy in malignant disease has been completely rewritten by Professor B. W. Windeyer and can be read profitably by all surgeons. There are excellent revisions on surgery of the thyroid, parathyroid and thymus by Sir Geoffrey Keynes, and surgery of the sympathetic by Sir Geoffrey Jefferson and Michael Boyd. The various other fields covered in this volume are the skull and brain; the ear; the eye; nose and pharynx; larynx and trachea; investigations of the upper air and food passages; the œsophagus; the lips; jaws, mouth, tongue and salivary glands; hare lip and cleft palate; operations on the neck; gynæcological and genito-urinary surgery. Each field is well covered by an acknowledged expert.

This volume is a real storehouse of practical information, presented in a very concise and clear manner, which will find a useful place in the surgeon's library. It can be particularly recommended to those postgraduate students taking the higher examinations in general surgery, as it provides a good understanding of fields with which they may not be too familiar.

BLUTALKOHOL. Die Wissenschaftlichen Grundlagen der Beurteilung von Blutalkoholbefunden bei Strassenverkehrsdelikten. (Blood Alcohol. Scientific Basis of Assessment of Blood Alcohol Findings in Traffic Accidents.) H. Elbel and F. Schleyer, Bonn, W. Germany. 226 pp. Illust. Georg Thieme Company, Stuttgart; Intercontinental Medical Book Corporation, New York, 1956. $6.40.

The author has systematically summarized a vast amount of material on chemical, clinical and performance tests of intoxication as employed in forensic cases. Emphasis is placed on the most recent studies in Europe and North America. Methods of alcohol determination using blood, urine, breath, body fluids and tissues are described in detail. Sources of error and various possible misinterpretations of findings are pointed out. Distinction is made between quantitative and qualitative chemical tests. It is felt that the latter should be used only to obtain a preliminary indication, and if the result is positive, a quantitative determination based on blood should be conducted to provide evidence for expert court testimony in offences involving drunkenness. Tests of concentration, reaction time and attention are described in detail. The blood alcohol levels at which an individual may be considered unsafe in traffic are discussed. It is urged that the alcohol concentration in the blood, rather than evidence that the ability to drive was affected, should be given forensic significance.

The merits and defects of the statutes requiring drivers to submit to a chemical test for intoxication are analyzed and a review of relevant court decisions is included. Great emphasis is put on a critical and complete compilation of the relevant literature.

This is an extremely well written and comprehensive book, and provides a useful critical source of information on tests of alcoholic intoxication and their medico-legal aspects.

THE ACCIDENT SYNDROME. The Genesis of Accidental Injury. M. S. Schulzinger. 234 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $7.25.

This book attempts to review the findings in 35,000 consecutive accidental injuries compiled by one physician working in Cincinnati from 1930 to 1948. It contains, for this reason alone, a great deal of information and it has been published at a time when attempts are being made in medical circles to treat accidents along epidemiological lines. For this reason it will have value as a reference book. There are 100 pages (almost one-half the volume) devoted to tables based on these case records.

On page 2 an illustration called the Accident Syndrome is produced. This is provocative and, one imagines, has been drawn literally from the author's experience. This chart should prove very useful in other accident studies.

The chapter on the clinical medical approach is instructive and should be read in its entirety.

This monograph can be of great guidance to doctors carrying out accident research in the casualty wards of teaching hospitals.

It would be a better book if the English were improved. Surely the publisher could give technical help in manuscript editing. A medical book should not only look well but read well. Publishers somehow seem content to pay most attention to appearances.

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THERAPEUTISCHE TECHNIK FUER DIE AERZTLICHE PRAXIS (Therapeutic Technique in Medical Practice). Edited by Karl Hansen, Lübeck, and Kurt Bloch, Stuttgart, W. Germany. 880 pp. Illust. 4th ed. Georg Thieme Company, Stuttgart; Intercontinental Medical Book Corporation, 1956. $22.60.

This edition of the book by Hansen and Bloch is really a continuation of a book which first appeared in 1906, but was allowed to lapse between 1933 and 1948. It is concerned, as its name implies, with techniques considered to lie within the scope of a versatile general practitioner. When the book was revived in 1948, Hansen confessed to some doubt about its value, in view of the fact that so many general practitioners in Germany had become the slaves of office routine. However, he believes that there is a great satisfaction to be obtained from technical and manual skill in medicine, and he and his colleagues describe those things which concern the skilled medical practitioner as craftsman. Thus the chapter on internal medicine contains a very detailed description of all injection techniques, including sternal puncture and intraosseous injection, together with the commoner manipulations in gastroenterology. This section also contains a brief account of hibernation therapy, treatment of barbiturate poisoning, including mention of the newer antidotes, nonspecific fever therapy, and such old techniques as wet and dry cupping and the application of leeches.

The section on neurology includes an account of the technique of lumbar and cisternal puncture, together with a note on Speransky's spinal pumping, against which the general practitioner is warned. The section on psychiatry includes shock treatments and the treatment of alcoholism with disulfiram and apomorphine (referred to as the "American or English cure"). The uses of chlorpromazine and reserpine also find a mention. The surgical sections contain an account of all sorts of things which might fall within the scope of general practice, including the simpler methods of anæsthesia, the treatment of a wide variety of injuries, performance of minor operations, and catheter and plaster work. The section on obstetrics contains full instructions on the use of forceps in all situations, but does not include Cæsarean section, which is considered beyond the scope of the book. All the other specialties are included, such as massage and exercises, pædiatrics, dietetics, general eye, ear, nose and throat work, electrical and radiation treatment. The most unusual feature of the book is a chapter on chiropractic manipulation, which is written with balance and must be unique in medical textbooks. The book is thoroughly well illustrated and contains many references to British, French, American and other work right up to 1956.

CLINICAL MANAGEMENT OF RENAL FAILURE. M. B. Strauss, Professor of Clinical Medicine, and L. G. Baisz, Instructor in Medicine, Boston University School of Medicine, Mass. 114 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $3.00.

This monograph admirably maintains the high degree of excellence set by its predecessors in the American Lecture Series. The kidneys' main functions are first defined as: (1) maintenance of a relatively constant composition and volume of the internal environment of the organism; and (2) removal of certain end products of catabolism no longer required by the body.

These basic facts are continuously considered as the authors proceed to discuss the differential diagnosis of acute and chronic renal failure. Emphasis is put on clinical applicability and clinical methods. Biochemical aspects are presented primarily in relationship to management. The practices and methods used are lucidly and logically set forth. Enough about divergent opinions is mentioned to keep the book from becoming dogmatic, but not so much as to leave the reader confused.

The book is aimed at the practising physician who encounters these problems and at the student who is attempting to understand the pathological physiology of renal failure. It is well worth reading.

THE DYNAMIC EQUILIBRIUM OF BODY PROTEINS. G. H. Whipple, Dean Emeritus of the School of Medicine and Dentistry, University of Rochester, N.Y. 68 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $3.50.

The main theme of this monograph, as the title suggests, is the dynamic equilibrium of the common body proteins found in the blood, lymph and tissues. The author discusses the ebb and flow within the total mass of body proteins, and indicates the ready interchange between the proteins in the circulation, in the extracellular fluids, in the tissue cells, and in the reserve stores. This is suggested by the term body protein pool. When the need arises, plasma proteins can contribute to the store of intracellular proteins, and meet the needs of the body for new proteins. Hæmoglobin, too, can supply its protein to the body pool, after it has been released from destroyed erythrocytes.

In this monograph, Professor Whipple reviews a number of papers dealing with the blood and tissue proteins collected for considerable "pool" which have appeared from his laboratory in the past 30 years. He has presented an orderly review of this material, discussing the more important experiments, including his own interpretation of the findings.

DIAGNOSIS AND TREATMENT OF PERIPHERAL VASCULAR DISORDERS. D. I. Abramson, Professor of Medicine, University of Illinois College of Medicine, Chicago. 537 pp. Illust. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, New York, 1956. $13.50.

Dr. Abramson, who is Professor of Physical Medicine and Rehabilitation as well as Professor of Medicine at the University of Illinois, has written a book which can be highly recommended. Professor Abramson is known for his work on the responses of blood vessels to various physiological and pharmacological stimuli, and to this experience of experimental work he adds good clinical judgment. The book impresses one as being written by a man who sees the clinical problems clearly and who knows how to arrive at a diagnosis from clinical study of the patient. The material is organized in a thoughtful way and there are many comprehensive tables to help those who prefer to learn by studying subjects arranged in point form. The writing is free of ambiguity or obscurity.

The first part of the book is devoted to an analysis of the presenting symptoms and signs found in patients with peripheral vascular disease. Methods of examination are clearly described and the limitations of the methods are not overlooked. The second section consists of a description of the diseases of peripheral vessels —arteries, veins and lymphatics—with the author's recommendations for treatment. He indicates clearly what can be expected from the various forms of treatment and does not hesitate to condemn therapy with the Pavaex boot in cases of arterial insufficiency or sympathectomy done in the mistaken belief that it will relieve intermittent claudication. One is surprised and sceptical about the author's faith in pancreatic extracts in the treatment of intermittent claudication, but perhaps this therapy will prove effective where so many other measures have failed. The final section reviews those anatomical, physiological and pharmacological facts and principles which provide a rational basis for the diagnosis and treatment of peripheral vascular disease. This well-balanced book merits reading.

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THE PATHOLOGY AND SURGERY OF THE VEINS OF THE LOWER LIMB. H. Dodd, Surgeon to St. Mary's Hospital (London) Group, and F. B. Cockett, Surgeon to St. Thomas's Hospital, London, England. 462 pp. Illust. E. & S. Livingstone Ltd., Edinburgh and London; The Macmillan Company of Canada Limited, Toronto, 1956. $11.25.

This volume is an authoritative, readable, superbly illustrated, well-indexed review of lower limb varicosities and venous ulcers. The authors point out that incompetent long and short saphenous venous systems, though important, account for only half of the venous ulcers they see. Even in these cases they feel that incompetent perforators in the medial and lateral lower leg or gaiter area are the essential cause of ulceration. The other 50% of venous ulcers follow a definite deep phlebitis and thrombosis in 25%, while a presumptive deep vein thrombosis accounts for the remaining 25%. Perforating vein incompetence of the lower leg region follows such phlebitis and thrombosis. This concept is well illustrated by case reports which give preoperative clinical findings, with excellent photographs and diagrams, venographic studies, and venous pressure studies at rest and in exercise; the operative findings, which confirm the presence of the incompetent perforators and the venous pathology, are also beautifully portrayed.

The sections on surgical anatomy and physiology are excellent, some splendid dissections being reproduced. Equally noteworthy sections are devoted to varicose veins, their diagnosis and treatment and postoperative complications. The authors stress the need for more adequate detail in diagnosis and treatment of varicosities. The differential diagnosis of ulcers of the leg is well presented, also with remarkable illustrations.

The question of deep vein ligation is fairly dealt with, the arguments pro and con being clearly brought out. A conservative attitude is logically taken, the authors feeling that only very rare cases indeed will benefit from such operations. They are even more conservative regarding sympathectomy which they reserve for post-thrombotic ulcer cases in which obliterative arterial disease or erythrocyanosis frigida is a definite factor.

This volume is highly recommended to the multitude who wish to improve their treatment of varicose veins and venous ulcers.

STATISTICS OF THERAPEUTIC TRIALS. G. Herdan, University of Bristol, England. 367 pp. Elsevier Publishing Company, Amsterdam, The Netherlands, and Houston, Texas, 1955. $10.50.

Medical researchers will find this book of invaluable help from the designing of an experiment to the analysis of the final results.

The book is divided into two parts. The first part deals primarily with statistical methods of analysis of medical data in general. In this section the answers to many fundamental problems on sampling size, control series and frequency distribution are clearly described. Tests of significance, i.e., standard deviation, standard error of the mean, Chi^2 and "t" test, are explained with interesting examples which can be easily followed. The author seems to realize that all researchers are not statisticians, and points out some of the common pitfalls and sources of error to be anticipated. A few published figures are criticized to emphasize with what care and consideration the researcher must prepare and analyze his data in order to present the true perspective of his results.

The second part of the book is concerned with sampling and testing of data of particular diseases. The section on cancer is most interesting and informative for the cancer research Fellow. The multiplicity of factors involved in the cancer problem is well understood by the author and he deals at some length with the design of experiment and criteria, with methods of comparing survival and end results.

This book is undoubtedly a great contribution to the library of books on statistical analysis so urgently needed in a period of ever-increasing research and investigation. The author is to be commended on his easily interpreted explanations, an art often lost by scientific writers.

LANDMARKS IN THE HISTORY OF HYGIENE. Henry E. Sigerist, Yale University. 78 pp. Illust. Oxford University Press, London, 1956. $2.00.

The contents of this volume are the Heath Clark lectures delivered by the medical historian, Henry Sigerist, at the London School of Hygiene in 1952. The long gap before their publication is unexplained, although the delay has not, of course, diminished in any way the value of the historical material contained in them. His first four lectures deal with four landmarks in the literature of hygiene. He first discusses Galen's *Hygiene*, passes on to the *Regimen Sanitatis Salernitatum* and its disputed authorship and date (Dr. Sigerist suggests John of Milan and the 14th century), thence to renaissance books on longevity with special reference to the writings of Luigi Cornaro (1467-1565), and finally to Johann Peter Frank's *System of a Complete Medical Policy* (1779 on). All these short essays are of interest to students of public health, in particular.

It is unfortunate that Dr. Sigerist has chosen to introduce some disputable political considerations into his last essay on the changing pattern of medical care. Beginning with the history of social security, he then expounds certain views on the future practice of medicine with which many will quarrel. "The people must work for it [health], must accept the responsibility for health, and the physicians are merely the experts advising the people in their struggle against disease." "What the families need most is not a family doctor but a health centre" (manned by a medical task force, as the Governor-General might have said!). Choice of doctor is considered a fiction, and the chief job of the general practitioner must be preventive. There are several references to the "red scare" which will not appeal to some readers at this time; "the Russian revolution of 1917 created a red scare from which many countries are still suffering" (Hungary, for instance?).

POTT'S PARAPLEGIA. D. Ll. Griffiths, Manchester Royal Infirmary, H. J. Seddon, University of London, and R. Roaf, University of Liverpool. 129 pp. Illust. Geoffrey Cumberlege, Oxford University Press, London, 1956. $7.50.

The authors of this monograph describe a new surgical treatment for Pott's paraplegia. They point out that classic treatment by strict bed rest fails sufficiently often to be disturbing; and moreover that relief cannot be obtained by laminectomy in such cases. Instead, they advocate decompression of the cord from in front, performing a costo-transversectomy if the compression is due to a fluid abscess or enlarging this to a formal antero-lateral decompression if the cord pressure is produced by solid material.

The pathology of the disease is clearly described, with the inclusion of several original observations. There follows a description of the surgical technique, and then an account of the results of the treatment. It is obvious that this new and radical surgical procedure offers real hope for that type of case which in the past has been dismissed as hopeless.

This book is well written, easy to read and clearly illustrated. The only criticism of note is that the authors do not make clear what proportion of cases of Pott's paraplegia fail to improve with conservative treatment. Nevertheless this is a thought-provoking book, and leads one to the conclusion that we are entirely too complacent about the results of conservative treatment. It is to be hoped, therefore, that the centres of conservative therapy in this country will be stimulated by this work to critically assess the results of treatment in their own cases.

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BOOK REVIEWS

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PROCEEDINGS OF THE ANNUAL MEETING. Council for High Blood Pressure Research, American Heart Association, 1955. Vol. 4. 186 pp. Illust. American Heart Association, New York, 1956. $4.50.

This is the fourth in a series of annual reports of the proceedings of the American Heart Association Council for High Blood Pressure Research. Of the eight papers, four are particularly concerned with the relation of the cardiovascular system to the nervous system. Of necessity much of the work reported is experimental and will be of most interest to those interested in the pathogenesis of hypertension.

PHARMACOLOGY AND ORAL THERAPEUTICS. A Textbook for Students and Practitioners. E. C. Dobbs, Professor of Pharmacology and Therapeutics, Dental School, University of Maryland. 579 pp. Illust. 11th ed. C. V. Mosby Company, St. Louis, Mo., 1956. $9.00.

This is the eleventh edition of a work which was formerly known as "Pharmacology and Dental Therapeutics". It includes a brief account of the pharmacology and therapeutics of all drugs which might conceivably come within the scope of the practitioner of dentistry or stomatology.

CARDIOLOGY. William Evans, London Hospital. 574 pp. Illust. 2nd ed. Butterworth & Co. Ltd., London, 1956. $18.50.

This textbook, now in its second edition, grew out of a series of lectures for postgraduate students at the London Hospital. It is characteristic of Dr. Evans's teaching method, in that didactic statements are made in order to stimulate thinking and clear away vague generalizations. Some of the statements made would be vigorously disputed by other authorities, but the fact that other opinions exist is often not mentioned. No references are given for opinions expressed, so we must take the author's word that they are made by competent authorities, on sufficient evidence. The sketchy outline of the pathophysiology of heart disease does not lead to a good understanding of the nature of the various conditions, and the remedies also lack full physiological explanation.

The text is a useful guide in diagnosis, and the radiological findings (excepting angiocardiographic) are fully discussed and illustrated. The electrocardiographic information is based on CR leads, on which Dr. Evans is an authority, instead of V leads.

It can be seen that this text is not for the medical student or general practitioner, as it does not lead to a complete understanding of the nature of heart disease; nor is treatment fully considered. However, for the cardiologist and internist, it provides interesting and stimulating reading.

HANDBOOK OF PEDIATRIC MEDICAL EMERGENCIES. Edited by A. G. DeSanctis, Post-Graduate Medical School, New York University-Bellevue Medical Center, and C. Varga, Portland, Oregon. 389 pp. Illust. 2nd ed. C. V. Mosby Company, St. Louis, Mo., 1956. $6.25.

This book contains an account of every type of emergency which may be met with in an infant or child, covering the various cardiac, metabolic, genito-urinary, neurological and respiratory emergencies and also miscellaneous emergencies such as the various types of bites, hæmorrhage, heat stroke, heat exhaustion, sunburn, serum reactions, and shock. There is also an extremely complete section on the various pædiatric procedures such as lumbar puncture and subdural tap, a section on drowning and a comprehensive section on poisoning and accident and poison prevention. The whole book is extremely well indexed, so that any subject can be looked up very quickly. The reading matter is very concise and largely in point form. Dosages of the many drugs recommended for the various emergencies are quite specific, and a great many tables are used to summarize pertinent material for ready reference.

This is an extremely valuable book which certainly should be in all hospital emergency departments where children are seen and is also extremely valuable to the practising pædiatrician or general practitioner.

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BOOK REVIEWS

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A PICTORIAL HISTORY OF MEDICINE. O. L. Bettmann, Director of the Bettman Archive, New York. 318 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $10.50.

The Bettman Archive in New York is a well-known collection of illustrations from European art centres assembled by Dr. Otto Bettman over many years. From this, Dr. Bettmann has selected a series of pictures illustrating the history of medicine from the earliest times. To accompany the pictures, he has written a simple commentary. Many of the pictures will appear as old friends to the student of medical history. The work is eminently suitable as a painless introduction to the subject, and should therefore be of particular interest to medical students. It is excellently produced, and more serious students of history will find it of value for the wealth of illustrations.

CLINICAL EXAMINATIONS IN NEUROLOGY. Sections of Neurology and Section of Physiology, Mayo Clinic and Mayo Foundation. 370 pp. Illust. W. B. Saunders Company, Philadelphia and London, 1956. $7.50.

Although the announced purpose of this book is to furnish a guide to the Fellows in Neurology of the Mayo Foundation, it furnishes an excellent text for the undergraduate student and intern. Its size will particularly commend it to the latter.

In content, it is clear and concise. Instructions for taking a good neurological history are explicit, especially in relation to such problems as headaches, pain or convulsive disorders. The brief anatomical reviews are adequate and clear.

Those who resent "forms" in any medical examinations may take exception to those included in the book. They have been developed at the Mayo Clinic to facilitate continuity in examinations by various individuals. Samples of these forms are to be found in a pocket at the end of the book.

The brief, concise presentation of the neurological examination makes this book easy to read and understand. The reviewer feels that it will prove extremely useful not only to students, but also general practitioners and internists who desire an up-to-date and easily available guide in performing and evaluating a neurological examination.

HYPERTENSION, A Manual for Patients with High Blood Pressure. Irvine H. Page, President, American Heart Association. 109 pp. Illust. 2nd ed. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1956. $3.25.

This book would be useful for a lay person who is interested in knowing more about his hypertension, but would not be of value to a physician.

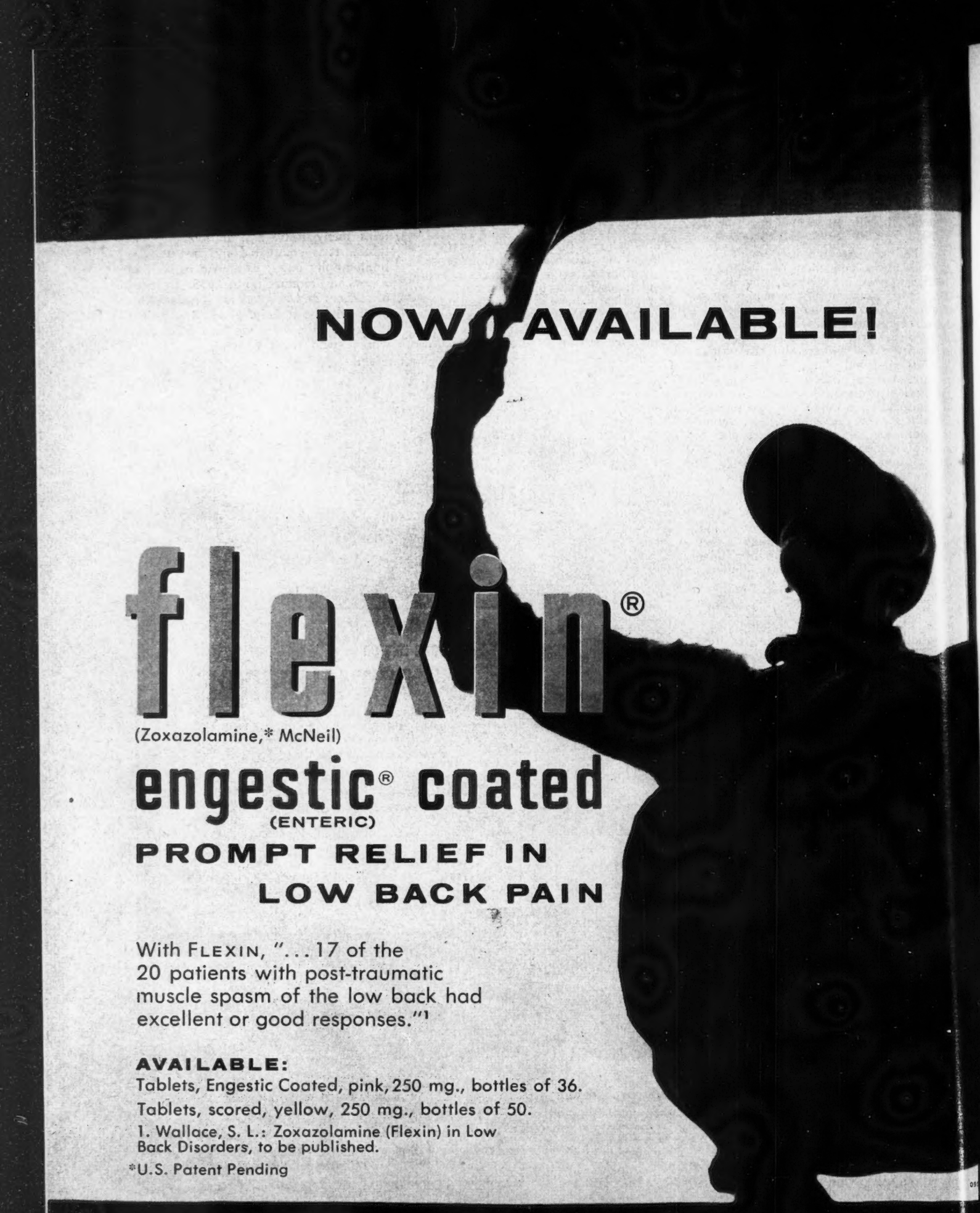
It is concise, understandable and matter-of-fact. It states what is known about hypertension and what can be done for it in the way of diet and manner of living. It tells of the new drugs, what they do and what are their limitations. It concludes with a plea for research on hypertension.

KLINISCHE FUNKTIONSDIAGNOSTIK (Clinical Diagnosis of Function). H. Kuchmeister and others. 411 pp. Illust. Georg Thieme, Company, Stuttgart; Intercontinental Medical Book Corporation, New York, 1956. $11.80.

This volume presents a collection of clinical and laboratory function tests. As the author states, it is rather a selection of methods he and his group have found of practical value and it does not contain a complete description of all tests.

The work is divided into 14 chapters, discussing among others the functional diagnostic tests in diseases of the thyroid, parathyroids, adrenals, cardiovascular system, peripheral vascular system, respiratory system, blood, kidneys, stomach, gall-bladder and liver.

The text is clearly written and contains many instructive illustrations and tables. It is completed by an extensive bibliography citing European as well as American literature up to 1955. An index of authors and subjects is included. This book will be a helpful addition to the library of the clinician and laboratory worker who reads German.



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1. Wallace, S. L.: Zoxazolamine (Flexin) in Low Back Disorders, to be published.

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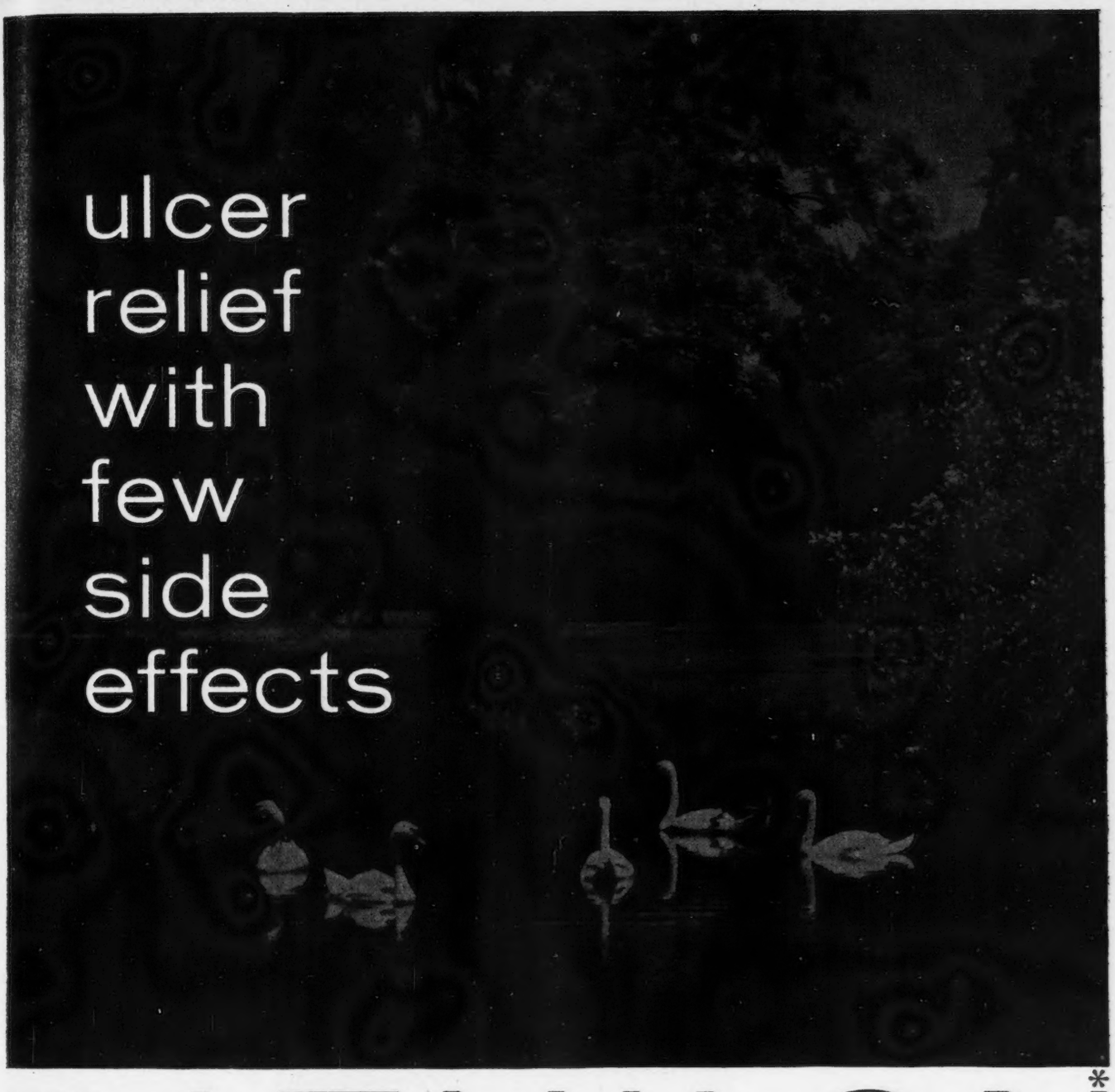

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1. Cayer, D.: Prolonged Anticholinergic Therapy of Duodenal Ulcer, *Am. J. Dig. Dis.* 1:301-309 (July) 1956.
2. Cayer, D.: *ibid.*
3. Council on Pharmacy and Chemistry: *J.A.M.A.* 160:389 (1956).

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MEDICAL NEWS *in brief*

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TREATMENT OF MULTIPLE SCLEROSIS WITH LOW FAT DIET

According to Swank (*Ann. Int. Med.*, 45: 812, 1956) it is becoming increasingly evident that the low fat diet alters the course of multiple sclerosis. Over a period of six years a substantial decrease in both frequency and severity of exacerbations has resulted. Prior to use of the low fat diet, patients were averaging about one exacerbation every year. During the sixth year on the diet these same patients were averaging one attack every eight years. During most of this six-year period the patients generally improved, and 23 of this group of 34 early and intermediate cases worked full time. Prior to use of the low fat diet, only nine of these patients were working full time.

Analysis of all 153 patients indicates an over-all improved or unchanged state of 64% during an average observation period of nearly four years. Considered alone, this is an impressive figure. It becomes even more impressive when early cases alone are considered. In this group, 92% have not deteriorated. Two of the five cases that deteriorated did not follow the diet, and the other three are still able to work full time. Benefit from the low fat diet was derived particularly in early cases. In late cases, continuing deterioration has been the rule, although this deterioration has been very slow. It appears that if the course of the disease is to be significantly altered, treatment must be started early.

The effect of diet seems to be cumulative. The longer patients are on the diet, the better they seem to do. This impression is supported by the gradual decrease in the frequency and severity of exacerbations observed over the six-year period. Also, the general well-being of the early patients, and their energy, seem to increase progressively as the period on diet lengthens.

The disease is not cured by the low fat diet even in early cases, since clear-cut exacerbations were noted in a few patients who followed the diet carefully. However, reduction in the severity and frequency of the exacerbations was substantial, and, despite the recurrence of minor exacerbations, most patients improved generally and became capable of increased work during the period that they consumed the low fat diet. It seems likely that a high fat intake is an important factor in causing a high morbidity of the disease.

THE CURRENT PROBLEM OF STAPHYLOCOCCAL INFECTIONS

Staphylococcal infections have assumed a position of great prominence during the past decade. Despite the inclusion of staphylococci with other microorganisms producing acute infec-

tions in man, there are unique features in staphylococcus-host relationships which set this microorganism apart as a highly adaptable parasite capable of surviving within human serum and phagocytic cells, and adjusting to meet unfavourable new environments, including human tissues bathed in antimicrobials.

The population now developing staphylococcal infections is, in certain important ways, a different group from that acquiring staphylococcal infections before antimicrobials were available. In general, the former are individuals with advanced, serious and potentially fatal disease who acquire staphylococcal infections in hospital.

The increasing incidence of infection in this group due to strains of staphylococci unsusceptible to many antimicrobial agents constitutes a disturbing problem. Nevertheless, it is difficult to assign therapeutic failures to drug resistance alone in a significant number of cases. The basic underlying disease upon which staphylococcal infection is superimposed is commonly the important factor in determining the outcome. In this era of antimicrobial coverage, the staphylococcus appears to have displaced the pneumococcus as the invader in terminal illness.

The healthy human host possesses a high degree of resistance to staphylococcal infections. There are recent indications that the circumstances which lead to altered host resistance can be approached and defined experimentally.

It appears probable that staphylococcal infections, once initiated, will continue to kill a number of seriously ill patients who now constitute a large part of our hospital populations. It is doubtful whether new antimicrobials will alter this situation, and, indeed, there is much to suggest that antimicrobials have played a role in the emergence of staphylococci as a troublesome hospital problem. More information is needed about the factors which increase host susceptibility to staphylococcal infection. Procedures which will effectively reduce staphylococcal carrier rates, and cross-inoculation of staphylococci within hospitals, also require better definition.

The therapy of established staphylococcal infections has received the major emphasis in recent years. Methods which may prevent staphylococcal infections in altered, abnormal hosts now merit equally serious investigation in the hope of reducing the hospital incidence of staphylococcal disease.—D. E. Rogers, *Ann. Int. Med.*, 45: 748, 1956.

DYNAMICS OF PLACEBO THERAPY

Fischer and Dlin (*Am. J. M. Sc.*, 232: 504, 1956) report that 75 patients with psychosomatic symptoms were divided into three fairly

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equal groups. Group A received a potent pill depressing the autonomic and central nervous systems. Group B received a placebo. Group O received no pills. All three groups received analytically oriented psychotherapy. The identity of the potent pill and of the placebo was unknown to the investigators.

Therapeutic results were recorded by both patient and physician. The pill group and the placebo group could not be differentiated by numbers of improved patients. The group receiving psychotherapy alone had the highest rate of improvement. Most patients reacted emotionally to both potent pill and placebo.

A placebo may be any object offered with therapeutic intent. The placebo may or may not produce a "placebo reaction" which is either subjective or objective, psychological or physiological, and positive or negative. The "placebo reaction" has no psychiatric diagnostic significance.

The "potency" of the placebo is derived from, and is a part of, the emotionally invested doctor-patient relationship. Its therapeutic ranges are the extremes of practical psychotherapy. Most patients did better in this study without placebo therapy. The "placebo reaction" occurs in psychotherapy, even without a pill, in the so-called "transference" cure. Specific indications for placebo therapy are not yet available, but placebo therapy should be an adjunct to psychotherapy.

It is concluded that placebo therapy should be the secret of the therapists, that a substance conceivably influencing some somatic symptom be used as the placebo, and that placebo therapy be time-limited to periods of increased stress.

PREVENTION OF RHEUMATIC FEVER AND BACTERIAL ENDOCARDITIS

Revisions of its recommendations for prevention of first and repeat attacks of rheumatic fever are incorporated in a new edition of the American Heart Association's statement on "Prevention of Rheumatic Fever and Bacterial Endocarditis Through Control of Streptococcal Infections." The revised statement appears in the December issue of "Modern Concepts of Cardiovascular Disease," the Association's monthly medical bulletin. The Committee points out that no recommendations can be considered final at this time.

Following are the principal changes in the recommendations:

(1) Greater emphasis is placed on the value of throat cultures in diagnosing streptococcal infections, with a view to stimulating an increased use of cultures particularly when clinical manifestations alone are inconclusive.

(2) A more qualified statement is made on the duration of prophylaxis. The Committee reaffirms its view that continuous prophylaxis should be maintained indefinitely for known rheumatic subjects, but recognizes that some physicians may wish to make exceptions in

certain of their adult patients, particularly those without heart disease who have had no rheumatic attacks for many years.

(3) Monthly injection of 1,200,000 units of benzathine penicillin G intramuscularly is now listed first among prophylactic methods. The Committee also indicates that it is preferable, if oral penicillin is chosen as the method of prophylaxis, to prescribe 200,000-250,000 units twice daily rather than once, providing an additional safeguard against break-throughs which have been reported with the smaller dosage.

Prophylaxis of Bacterial Endocarditis

Also revised in the statement are the recommended dosages for prophylaxis of bacterial endocarditis in patients with rheumatic or congenital heart disease obliged to undergo such surgical procedures as dental extractions or tonsillectomy. Emphasizing that the dosage regimens used for long-term prophylaxis of streptococcal infections are inadequate for this purpose, the Committee recommends that high blood levels of penicillin be maintained for several days (rather than, as previously stated, on the day of operation alone) to prevent organisms from lodging in the heart valves during the period of transient bacteræmia.

In general, combined oral and parenteral administration is preferred; oral penicillin (200,000-250,000 units four times a day) for the two days *before* and the two days *after* surgery; the same dosage of oral penicillin on the day of surgery *plus* 600,000 units of aqueous penicillin with 600,000 units of procaine penicillin shortly before operation. Alternative recommendations are included for situations in which injection is not feasible or penicillin is contraindicated.

DISEASE CONTROL AND INTERNATIONAL TRAVEL

In a special issue of the World Health Organization *Chronicle* the International Sanitary Regulations governing world-wide trade and traffic are reviewed. Each of the six so-called "quarantinable" diseases—cholera, plague, typhus, relapsing fever, smallpox and yellow fever—is discussed in turn. The hazard associated with these six diseases has declined greatly in each case. The International Sanitary Regulations are particularly directed against these great plagues of history. They went into effect in October 1952, and since then not a single epidemic of any of these diseases has occurred as a result of international travel. Only 45 ships and one aircraft have been reported as carrying a person suspected of suffering from one of these diseases. The writers of the report state that the Regulations have proved satisfactory during the past four years and the spirit in which they are being applied bears evidence of a desire for mutual co-operation, understanding and goodwill. It would seem that cholera may well be wiped out entirely in the foreseeable future; the present record of 385,000 cholera deaths in five years in India and Pakistan is the lowest on record.

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The plague spots which still exist in the world are remnants of the epidemics of plague of the nineteenth century. The only significant problem is that of the control of wild-rodent plague in certain countries. Epidemic typhus and relapsing fever are now of little significance in international quarantine. The persistence of endemic foci of smallpox requires vigilance to prevent spread of infection, but smallpox is no longer the threat it used to be even at the beginning of the century. Yellow fever is the most serious problem in international quarantine, though for some unknown reason it has never spread to Asia. Work in the Americas has shown that this disease can be suppressed from urban areas.

The authors end the study by pointing out that the irresistible size and significance of rapidly growing world transport will make the application of old-fashioned quarantine techniques of little avail.

PATHOGENESIS AND TREATMENT OF MACROCYTIC ANÆMIA

A Baltimore group of workers (*A.M.A. Arch. Int. Med.*, 96: 541, 1956) have made extensive use of absorption tests for vitamin B_{12} by labelling the vitamin with radioactive cobalt and thus directly measuring the capacity of the intestine to absorb the vitamin. They emphasize that clinical states of deficiency of vitamin B_{12} are almost always the result of impaired absorption of the vitamin from the gastro-intestinal tract. They were surprised to find that vitamin B_{12} is often poorly absorbed by normal persons, and that its uptake is severely impaired quite regularly in patients with pernicious anæmia and not infrequently in members of their families.

In some cases where defective absorption is due to deficiency of intrinsic factor, this can be corrected by administering a source of the latter, together with vitamin B_{12}. Where the defect, however, is due to a functional or an anatomical lesion of the small intestine, as in sprue, enteritis, pancreatic insufficiency and intestinal

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resection, intrinsic factor is of no value. When the absorptive deficiency is due to utilization of the vitamin by parasitic organisms in the intestinal tract, destruction of the organism will correct the defect. All this shows that vitamin B_{12} can be used in intensive therapy only if given parenterally. In discussion, it was suggested that a radioactive vitamin B_{12} absorption or excretion test is now a requirement for the diagnosis of pernicious anæmia.

TREATMENT OF IRON-DEFICIENCY ANÆMIA

Iron-deficiency anæmia may occur at any age, but its cause in children is usually a dietary deficiency whereas in adults it is usual only after chronic blood loss. The adult is virtually independent of his dietary iron. The only certain diagnostic test for uncomplicated iron-deficiency anæmia is the response of the patient to iron therapy. The latter should be given in the form of reduced iron salts, such as ferrous sulfate or gluconate. There is no need to add any other drug whatsoever to the iron. Indeed the addition of other drugs will inevitably complicate the diagnosis, and may hamper detection of a serious bleeding disorder in adults. Indications for parenteral iron include intolerance of oral iron, inflammatory gastro-intestinal disease, a chronic bleeding lesion making it necessary to create an iron store, and poor absorption of iron from the gut.—A. R. Stevens, *A.M.A. Arch. Int. Med.*, 96: 550, 1956.

CHLORISONDAMINE (ECOLID) IN HYPERTENSION

Moyer and his colleagues from the Baylor University College of Medicine, Houston, Texas, (*Am. Practitioner*, 7: 1765, 1956) report laboratory and clinical observations of the use of chlorisondamine (Ecolid) in the treatment of hypertension. They suggest that, in a hypertensive emergency, treatment should start with parenteral administration of reserpine, and continue with a combination of either chlorisondamine plus reserpine or the similar combination pentolinium and reserpine. Chlorisondamine is a quaternary ammonium compound useful orally or parenterally, the average daily dose in the present series being 253 mg. In its action as a ganglion-blocking agent it was very similar to pentolinium. In the authors' clinic it is used only in conjunction with a rauwolfia preparation, in order to keep the dose low, reduce the side-effects, produce a consistent lowering of blood pressure, and minimize the anxiety associated with hypertension. Side-effects include constipation, nasal congestion, dizziness and blurred vision, and impotence. The authors warn that use of a hypotensive drug in the presence of severe renal damage may aggravate the condition. They keep a check on renal function by determining blood urea nitrogen from time to time. If the latter is above 80-100 mg. %, reducing the blood pressure significantly usually aggravates renal failure.

HEAD INJURIES

An editorial in the *Lancet* (December 22, 1956) deals with the exceedingly difficult question of head injuries. The writer points out that the incidence of admission of population to hospital every year because of head injury is about 1:1000. Of these a small proportion in the United Kingdom are later transferred to a regional head-injury centre for special treatment. However, of all patients admitted to hospital at least seven out of ten require no treatment and would presumably have got well if they had remained at home.

The difficulty is to know which patients are likely to need special treatment. In the United Kingdom a casualty department usually admits anyone with a history of unconsciousness, however transient, anyone with increasing headache and anyone with physical signs—especially pupil changes—indicating brain damage. Patients occasionally appear at hospital with no such indications, and later go on to develop such complications as extradural hæmorrhage. In such cases, members of the neurosurgical team may be tempted to blame the original casualty officer for not referring the case sooner; the editorial writer protests against this unfair criticism.

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MENTAL HOSPITALS AND THE COMMUNITY

It is by now fairly well known that pioneer work has been done in certain parts of the United Kingdom in planning a new relationship of the mental hospital to the surrounding community. This work is particularly associated with Dr. T. P. Rees, who has encouraged the community to take an interest and responsibility in connection with care at Warlingham Park Mental Hospital, Croydon, England, and has also insistently upheld the "open hospital" principle. We learn that a committee of hospital directors from New York State is apparently studying this type of development (January 19-February 12) in the United Kingdom, aided by a grant from the Milbank Memorial Fund. The committee is seeking answers to a number of questions such as the way in which British mental hospitals have achieved "open door" policies and succeeded in integrating the community into their work, the smoothness or otherwise of the working of these plans, the fundamental principles concerned, and the possibility of transplanting these principles to the North American community. On its return, the committee will make a report to the Commissioner of Mental Hygiene for New York State, Dr. Paul H. Hoch. The outcome will be awaited with interest.

EFFECTS OF DDT ON MAN

The Council on Pharmacy and Chemistry of the American Medical Association reports an interesting study of the effects of known repeated oral doses of chlorophenothane (DDT) in man. A group of 51 men were divided into three sets: one-third received no DDT except that in the ordinary diet; one-third received 3.5 mg. DDT per man per day; one-third received 35 mg. per man per day, i.e. 200 times the daily rate of average intake from a normal diet. During the entire study nobody complained of any symptom or showed any sign of illness attributable to DDT.

Fat samples for determination of derivatives of DDT were obtained by biopsy. Pure DDT was found to be stored in fat at a higher concentration than the technical grade; it appears that, in the dosages used, men achieve maximum storage of DDT in about a year and then store no more despite continued intake. The conclusion from the experiment is that there is a large safety factor associated with DDT as now occurring in the general diet.

PUBLIC RETRACTION

In an editorial in *Surgery, Gynecology and Obstetrics* for October 1956, Gilchrist makes an important point about publications and lectures by specialists to the general practitioner. He points out that very often a surgeon or other specialist advocates a line of treatment in public which he later

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finds not to stand the test of time. In such cases it is extremely important that he should publicly retract his statement in such a fashion as to reach the audience who were formerly misled by his first statement. This procedure is not sufficiently often followed, with the result that many general practitioners are continuing to use treatments about which they have heard at a lecture or about which they have read some years ago, long after the original author has abandoned the treatment.

INTERNATIONAL COLLEGE OF SURGEONS

The International College of Surgeons extends a cordial invitation to all physicians, medical personnel and their friends to attend its Tenth International Congress in Mexico City, February 24-28. The meeting is being held at the invitation of His Excellency, Don Adolfo Ruiz Cortines, President of Mexico. Four days will be devoted to the scientific program, to be presented at the University of Mexico. Social functions have been scheduled. For those who wish to see something of the country, two post-congress tours have been arranged.

Further information is obtainable from International Travel Service, Inc., Palmer House, Chicago 3, Ill.

RESEARCH GRANT IN OBSTETRICS AND GYNÆCOLOGY

The Council of the Royal Society of Medicine of London, England, invites applications for a grant of £225 per annum in aid of research to be carried out to advance knowledge in obstetrics and gynæcology, which will be awarded on the recommendation of the Council of the Section of Obstetrics and Gynæcology of the Society. This fellowship (the Nichols Fellowship) will be awarded in the first place for a period of one year and, at the discretion of the Council, may be extended for a second year. Applications must be received by the Secretary, Royal Society of Medicine, 1, Wimpole Street, London, W.1, by May 13, 1957.

FIFTH INTERNATIONAL CONGRESS OF THERAPEUTICS

The Fifth International Congress of Therapeutics will be held at Utrecht in the Netherlands on June 4, 5 and 6, 1957. Its object is to bring together pharmacologists and clinicians in order to exchange experiences acquired in laboratories and clinics. The provisional scientific program contains three main themes: (1) recent developments in the study of the adreno-cortical hormones, in which Professor Reichstein of Basle and other speakers will participate; (2) diseases of the central nervous system, in which Parkinson's disease will be discussed by speakers from Paris, Utrecht and New York and the therapeutics of epilepsy will be discussed by Dr. Francis McNaughton of Montreal; (3) cytolytic and cytostatic drugs, with speakers from London, Brussels, Rome and Amsterdam. Social events, excursions and an official congress dinner are planned. Early reservation is urged, and additional information can be obtained from the General Secretary's Office, Vondellaan 6, Utrecht, Netherlands.